

# DEPARTMENT OF ENVIRONMENTAL CONSERVATION

## AIR QUALITY OPERATING PERMIT

Permit No. 53TVP01  
Application No. 53  
Administrative Revision November 29, 2002

Issue Date: October 19, 2000  
Expiration Date: October 18, 2005

The Department of Environmental Conservation, under the authority of AS 46.14 and 18 AAC 50, issues an operating permit to the Permittee, **Fairbanks Gold Mining, Inc.**, for the operation of the **Fort Knox Mine**.

This permit satisfies the obligation of the owner and operator to obtain an operating permit as set out in AS 46.14.130(b).

As required by AS 46.14.120(c), the Permittee shall comply with the terms and conditions of this operating permit.

As set out in 18 AAC 50.340(i), after the issue date of this permit, the Permittee is no longer required to comply with the terms and conditions of Air Quality Control Permit to Operate No. 9531-AA007.

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John F. Kuterbach, Manager  
Air Permits Program

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### List of Abbreviations Used in this Permit

AAC .....	Alaska Administrative Code
ADEC .....	Alaska Department of Environmental Conservation
AS .....	Alaska Statutes
ASTM .....	American Society for Testing and Materials
CFR .....	Code of Federal Regulations
COMS .....	Continuous Opacity Monitoring System
dscf .....	Dry standard cubic feet
EPA .....	US Environmental Protection Agency
gr/dscf .....	Grain per dry standard cubic feet (1 pound = 7000 grains)
HAPS .....	Hazardous Air Pollutants [hazardous air contaminants as defined in AS 46.14.990(14)]
ID .....	Source Identification Number
kW .....	Kilowatt
MACT .....	Maximum Achievable Control Technology
Mlb .....	thousand pounds
NESHAPs .....	Federal National Emission Standards for Hazardous Air Pollutants [as defined in 40 CFR §61]
NSPS .....	Federal New Source Performance Standards [as defined in 40 CFR §60]
PPM .....	Parts per million
PS .....	Performance specification
PSD .....	Prevention of Significant Deterioration
RM .....	Reference Method
SIC .....	Standard Industrial Classification
SO <sub>2</sub> .....	Sulfur dioxide
TPH .....	Tons per hour
TPY .....	Tons per year
VOC .....	volatile organic compound [as defined in 18 AAC 50.990(103)]
WT% .....	weight percent

**Section 1. Identification****Names and Addresses**

Permittee:	<b>Fairbanks Gold Mining, Inc</b> P.O. Box 73726 Fairbanks, AK 99707-3726
Facility:	<b>Fort Knox Mine</b>
Location (UTM):	7,209.240 Northing; 484.275 Easting; Zone 6Eastin,
Physical Address:	#1 Fort Knox Road Fairbanks, AK 99707
Owner:	Fairbanks Gold Mining, Inc. P.O. Box 73726 Fairbanks, AK 99707-3726
Operator:	Fairbanks Gold Mining, Inc. P.O. Box 73726 Fairbanks, AK 99707-3726
Permittee's Responsible Official	Thomas E. Irwin, Vice President/General Manager
Designated Agent:	Thomas E. Irwin, Vice President/General Manager P.O. Box 73726 Fairbanks, AK 99707-3726
Facility and Building Contact:	William Jeffress, Manager, Environmental Services P.O. Box 73726 Fairbanks, AK 99707-3726 (907) 488-4653, ext. 2206 bjeffress@fiarbanksgold.com
Fee Contact:	William Jeffress, Manager, Environmental Services P.O. Box 73726 Fairbanks, AK 99707-3726

**SIC Code of the Facility:**

1041 - Metal Mining, Gold Ore: this includes open pit mining, crushing, grinding, concentration, and, ultimately, production of refined gold bullion

[18 AAC 50.350(b), 1/18/97]

## **Section 2. General Emission Information**

Emissions of Regulated Air Contaminants, as provided in Permittee's application:

PM-10, SO<sub>2</sub>, NO<sub>2</sub>, CO, VOC, 1, 3 Butadiene, Acetaldehyde, Acrolein, Arsenic, Benzene, Beryllium, Cadmium, Chromium, Cobalt, Formaldehyde, Hexane, Lead, Manganese, Mercury, Naphthalene, Nickel, Toluene, and Xylenes

Operating Permit Classifications:

1. 18 AAC 50.325(b)(1)
2. 18 AAC 50.325(b)(3)

Facility Classifications as described under 18 AAC 50.300(b)-(f):

3. State Implementation Plan Facility – 18 AAC 50.300(b)(1)(A)

[18 AAC 50.350(b), 1/18/97]

### **Section 3. Fee Requirements**

- 1. Assessable Emissions.** The permittee shall pay to the department annual emission fees based on the facility's assessable emissions as determined by the department under 18 AAC 50.410. The assessable emission fee rate is set out in 18 AAC 50.410. The department will assess fees per ton of each air contaminant that the facility emits or has the potential to emit in quantities greater than 10 tons per year. The quantity for which fees will be assessed is the lesser of

1.1 the facility's assessable potential to emit of 248.5 tpy (134.9 tons of NO<sub>x</sub>, 60.9 tons of SO<sub>2</sub>, 25.2 tons of PM-10, and 27.5 tons of CO) plus the additional assessable fugitive particulate matter potential to emit; or

1.2 the facility's projected annual rate of emissions that will occur from July 1 to the following June 30, based upon actual annual emissions emitted during the most recent calendar year or another 12 month period approved in writing by the department, when demonstrated by

- a. an enforceable test method described in 18 AAC 50.220;
- b. material balance calculations;
- c. emission factors from EPA's publication AP-42, Vol. I, adopted by reference in 18 AAC 50.035; or
- d. other methods and calculations approved by the department.

[18AAC50.400 - 420 & 18 AAC 50.350(c), 1/18/97]

- 2. Assessable Emissions Estimates.** Emission fees will be assessed as follows:

2.1 no later than March 31 of each year, the permittee may submit an estimate of the facility's assessable emissions to ADEC, Air Permits Program, ATTN: Assessable Emissions Estimate, 410 Willoughby Ave., Juneau, AK 99801-1795; the submittal must include all of the assumptions and calculations used to estimate the assessable emissions in sufficient detail so the department can verify the estimates; or

2.2 if no estimate is received on or before March 31 of each year, emission fees for the next fiscal year will be based on the potential to emit set out in condition 1.1.

[18AAC50.410 & 18 AAC 50.350(c), 1/18/97]

#### ***Section 4. Source Inventory and Description***

Sources listed below have specific monitoring, record keeping, or reporting conditions in this permit. Source descriptions and ratings are given for identification purposes only.

**Table 1 – Regulated Source Information**

<b>ID</b>	<b>Source Name</b>	<b>Source Description</b>	<b>Rating/Size (not enforceable)</b>	<b>Installation Date</b>
1	Generator 1	Caterpillar 3516 Engine	1750 kW	10/31/96
2	Generator 2	Caterpillar 3516 Engine	1750 kW	10/31/96
3	Generator 3	Caterpillar 3516 Engine	1750 kW	10/31/96
4	Generator 4	Caterpillar 3516 Engine	1750 kW	10/31/96
5	Boiler 1	PVI-80 WBHE 100A-TPO	3.2 MMBtu/hr	10/31/96
6	Boiler 2	PVI-80 WBHE 100A-TPO	3.2 MMBtu/hr	10/31/96
7	Boiler 3	PVI-80 WBHE 100A-TPO	3.2 MMBtu/hr	10/31/96
8	Boiler 4	Kewanee 300	11.6 MMBtu/hr	10/31/96
9	Boiler 5	PVI-125	5.2 MMBtu/hr	10/31/96
10	Boiler 6	PVI-125	5.2 MMBtu/hr	10/31/96
11	Boiler 7	PVI-125	5.2 MMBtu/hr	10/31/96
12	Boiler 8	Burnham V-912	1.8 MMBtu/hr	10/15/97
13	Boiler 9	Columbia Boiler – Waste Oil	0.7 MMBtu/hr	10/31/96
14	Boiler 10	Columbia Boiler – Waste Oil	0.7 MMBtu/hr	10/97
15	Heater 1	Applied Air 125/175	1.3 MMBtu/hr	10/31/96
16	Heater 2	Applied Air 75/55	0.7 MMBtu/hr	10/31/96
17	Heater 3	Applied Air 400/250	3.3 MMBtu/hr	10/31/96
18	Heater 4	Applied Air 175/100	1.3 MMBtu/hr	10/31/96
19	Heater 5	Applied Air 175/125	1.6 MMBtu/hr	10/31/96
20	Heater 6	Applied Air 175/125	1.6 MMBtu/hr	10/31/96
21	Heater 7	Hastings UFO25H	0.2 MMBtu/hr	10/31/96
22	Heater 8	Hastings UFO25H	0.2 MMBtu/hr	10/31/96
23	Heater 9	Hastings CF-55-L02	0.6 MMBtu/hr	10/31/96
24	Heater 10	Hastings CF-55-L02	0.6 MMBtu/hr	10/31/96
25	Heater 11	Hastings UFO25H	0.3 MMBtu/hr	10/31/96
26	Heater 12	Hastings UFO25H	0.3 MMBtu/hr	10/31/96
27	Incinerator 1	Shenandoah P-16-20-T	100 lbs/hr	10/31/96
28	Induction Furnace 1	Inductotherm	500 lbs/day	10/31/96
29	Carbon Regeneration Kiln 1	Lockheed/Haggerty 268K001	15 tons/day	10/31/96
30	Primary Crusher 1	Nordberg Gyratory	3,000 tons/hr	10/31/96
31	Cone Crusher 1	Nordberg Symons	400 tons/hr	7/20/98
32	Reclaim Tunnel 1	N/A	50,000 tons/day	10/31/96
33	Lime Silo Bin Vent 1	N/A	30 tons/day	10/31/96
34	Storage Tank 1	Diesel Fuel – Mobile Sources	20,307 gal (76.8 m <sup>3</sup> )	10/96
35	Storage Tank 2	Diesel Fuel – Heating Oil	20,307 gal (76.8 m <sup>3</sup> )	10/96
36	Heating Oil Tank 1	Heating Oil (DF1 and DF2)	20,307 gal (76.8 m <sup>3</sup> )	10/96
37	Miscellaneous	Fugitive Emissions	N/A	N/A

## **Section 5. Source-Specific Requirements**

### **Diesel Fired Internal Combustion Engines**

#### *Visible Emissions*

3. The Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from Source IDs 1-4 to reduce visibility through the exhaust effluent by greater than 20% for more than three minutes in any one hour.

[18 AAC 50.055(a)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

Monitor, record and report according to Section 12.

[18 AAC 50.350(g-i), 1/18/97]

#### *Particulate Matter*

4. The Permittee shall not cause or allow particulate matter emitted from Source IDs 1-4 to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.

[18 AAC 50.055(b)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

Monitor, record and report according to Section 12.

[18 AAC 50.350(g-i), 1/18/97]

#### *Sulfur Compound Emissions*

5. The Permittee shall not cause or allow sulfur compound emissions, expressed as SO<sub>2</sub>, from Source IDs 1-4 to exceed 500 PPM averaged over three hours.

[18 AAC 50.055(c), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

- 5.1 Compliance with this condition is assured by using a grade of fuel that limits sulfur content less than 0.5 percent by weight, such as DF-1 or DF-2.
- 5.2 Obtain a statement or receipt from the fuel supplier certifying the grade of the fuel for each shipment of fuel delivered to the facility. If a certificate is not available from the supplier, analyze a representative sample of the fuel to determine the sulfur content using ASTM method D2622-98 and ASTM 4294-98 or an alternative method approved by the department .
- 5.3 Report per condition 67 whenever you receive fuel that does not meet the requirements of condition 5.1. When reporting under this condition, include a material balance calculation of the sulfur compound emissions, in PPM, expected from this fuel, made in accordance with Section 14.

- 5.4 Include in the report required by condition 69 a list of the fuel grades received at the facility during the reporting period, and any reports required by 5.3.

[18 AAC 50.350(g) – (i), 1/18/97]

- 5.5 Keep records of the sulfur contents of each shipment of fuel, each calculated three-hour SO<sub>2</sub> concentration, and all test results and calculations required under conditions 5.2, 5.3, or 5.4. Report copies of the records with the report required by condition 69.

[18 AAC 50.350(h) & (i), 1/18/97]

- 5.6 Submit a report in accordance with condition 67 if a three-hour exhaust concentration, calculated pursuant to condition 5.3, is greater than 500 PPM.

[18 AAC 50.350(i), 1/18/97]

*PSD Avoidance Limits*

6. The Permittee shall limit the operating hours for the four diesel engines (source IDs 1-4) in any consecutive (rolling) twelve-month period to less than 4000 hours total.

[18 AAC 50.350(e)(3), 1/18/97]

[Air Quality Control Permit No. 9531-AA007]

- 6.1 Monitor the operating hours for each engine by installing and maintaining a timer that starts when the engine starts and that stops when the engine stops. Record monthly the number of hours the engine operated.

[18 AAC 50.350(g) & (h), 1/18/97]

- 6.2 Report in accordance with Condition 69 the individual and combined total engine operating hours for each of the past six months; include the rolling twelve-month total individual and combined engine operating hours for each month of the six-month reporting period.

[18 AAC 50.350(i), 1/18/97]

- 6.3 Report in accordance with condition 67 if the individual or combined operating hours of any or all the engines exceed the limits set forth in this condition.

[18 AAC 50.350(i), 1/18/97]

7. Permittee shall limit the oxides of nitrogen emissions from each diesel engine (source IDs 1-4) to no more than 61.15 pounds per hour (lbs/hr).

[18 AAC 50.350(e)(3), 1/18/97]

[Air Quality Control Permit No. 9531-AA007]

- 7.1 Permittee shall conduct source testing on each diesel engine to quantify the oxides of nitrogen emissions in accordance with Section 9 of this permit as follows:

- a. conduct testing on each engine within 30 days of that engine reaching 1,000 operating hours in any rolling twelve-month period,

- b. as an alternative to condition 7.1a, Permittee may test each engine once during the life of this operating permit; the testing should be completed by the end of the third year from the permit's effective date.
- c. no matter which option above is selected, Permittee shall perform the source testing to quantify the nitrogen oxide emissions using EPA reference methods 1-4 and 7E.

[18 AAC 50.350(g), 1/18/97]

- 7.2 Permittee shall record and report the results of this source testing in accordance with Section 9 of this permit.

[18 AAC 50.350(h-i), 1/18/97]

## Boilers and Heaters

The fuel oil-burning boilers and a single heater with rated heat input capacities greater than the insignificant source threshold of 18 AAC 50.335(t)(7) are treated by condition nos. 8, 9, and 10. The source IDs subject to these conditions are 5-12 and 17. The two waste oil boilers (source IDs 13 and 14) are treated separately in conditions 17 through 19. The boilers and heaters with rated heat input capacities less than 1.7 MMBtu/hr, where compliance with the particulate, opacity, and sulfur dioxide standards is concerned, are treated in Section 7, Insignificant Sources. All fuel oil-burning boilers and heaters, regardless of rated heat input capacity must also comply with condition 31 in the Facility-Wide Requirements section of this permit.

Source ID 8 (the Kewanee 300 boiler) has requirements associated with 40 CFR 60 Subpart Dc. These requirements are contained in conditions 11 and 12.

### *Visible Emissions*

8. Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from Source IDs 5-12 and 17 to reduce visibility through the exhaust effluent by greater than 20% for more than three minutes in any one hour.

[18 AAC 50.055(a)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

Monitor, record and report according to Section 12.

[18 AAC 50.350(g-i), 1/18/97]

### *Particulate Matter*

9. Permittee shall not cause or allow particulate matter emitted from Source IDs 5-12 and 17 to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.

[18 AAC 50.055(b)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

Monitor, record and report according to Section 12.

[18 AAC 50.350(g-i), 1/18/97]

*Sulfur Compound Emissions*

- 10.** Permittee shall not cause or allow sulfur compound emissions, expressed as SO<sub>2</sub>, from Source IDs 5-12 and 17 to exceed 500 PPM averaged over three hours.

[18 AAC 50.055(c), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

- 10.1 Compliance with this condition is assured by using a grade of fuel that limits sulfur content to less than 0.5 percent by weight, such as DF-1 or DF-2.
- 10.2 Obtain a statement or receipt from the fuel supplier certifying the grade of the fuel for each shipment of fuel delivered to the facility. If a certificate is not available from the supplier, analyze a representative sample of the fuel to determine the sulfur content using ASTM method D129-00, D1552-95, D1266-98, D4045-99, D2622-98, and ASTM4294-98.
- 10.3 Report per condition 67 whenever you receive fuel that does not meet the requirements of condition 10.1. When reporting under this condition, include a material balance calculation of the sulfur compound emissions, in PPM, expected from this fuel, made in accordance with Section 14.
- 10.4 Include in the report required by condition 69 a list of the fuel grades received at the facility during the reporting period, and any reports required by 10.3.
- 10.5 Keep records of the sulfur contents of each shipment of fuel and all test results and calculations required under conditions 10.2, 10.3, or 10.4. Report copies of the records with the report required by condition 69.
- 10.6 Submit a report in accordance with condition 67 if a three-hour exhaust concentration, calculated pursuant to condition 10.3, is greater than 500 PPM.

[18 AAC 50.350(g) – (i), 1/18/97]

[18 AAC 50.350(h) & (i), 1/18/97]

[18 AAC 50.350(i), 1/18/97]

[18 AAC 50.350(i), 1/18/97]

**Kewanee 300 Boiler (Source ID 8)**

*New Source Performance Standard (40 CFR 60 Subpart Dc) Requirements*

- 11.** Permittee shall keep copies of the notifications submitted to EPA required under 40 CFR §60.7(a)(1)-(3) and 40 CFR §60.48c(a)(1). Copies of any future reports submitted to EPA under these sections shall be submitted to the Department at the address contained in condition 64.

[18 AAC 50.040(a)(2)(E) and 18 AAC 50.350(g), 1/18/97]  
[40 CFR 60.7(a)(1)-(3) and 40 CFR 60.48c(a)(1), 1999]

- 12.** Permittee shall burn only liquid fuels in source ID 8 that contain no more than 0.5% sulfur by weight.

[18 AAC 50.040(a)(2)(E), 1/18/97]  
[40 CFR 60.42c(d), 1999]

- 12.1** Permittee shall monitor and record compliance status with this provision by complying with conditions 10.2 and 10.3.

[18 AAC 50.040(a)(2)(E) and 18 AAC 50.350(g), 1/18/97]  
[40 CFR 60.42c(h)(1) and 40 CFR 60.44c(h), 1999]

- 12.2** Permittee shall record and maintain records of the amount of fuel burned each day in this source.

[18 AAC 50.040(a)(2)(E), 1/18/97]  
[40 CFR 60.48c(g), 1999]

- 12.3** Permittee shall submit the following to EPA (their address is listed in condition 70.2) every six months:

- a. The name of the fuel supplier and a statement from the supplier that the fuel oil complies with the specifications for DF-1 or DF-2 as determined by ASTM D396-78.
- b. A certified statement signed by the facility's responsible official that the fuel oil certifications referenced in 12.3a represent all the fuel(s) combusted during the reporting period.

[18 AAC 50.040(a)(2)(E), 1/18/97]  
[40 CFR 60.48c(e)(11) and (f)(1), 1999]

- c. As an alternative to 12.3a and 12.3b above, Permittee may submit a copy of the semi-annual operating report required under condition 69 to EPA so long as it contains the information required by those paragraphs.

[18 AAC 50.040(a)(2)(E), 1/18/97]  
[40 CFR 60.19(d), 1999]

### Source Subject to Federal New Source Performance Standards

- 13.** Maintain records of the occurrence and duration of any start-up, shutdown, or malfunction in the operation of Source IDs 8, 30-32, any malfunctions of associated air-pollution control equipment, and any periods during which a continuous monitoring system or monitoring device for these sources is inoperative.

[18 AAC 50.040(a)(1), 1/18/97]  
[Federal Citation: 40 C.F.R. 60.7(b), 7/1/97]

- 14. Good Air Pollution Control Practice.** At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate Source ID 8, 30-32, including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance records, and inspections of Source ID 8, and 30-32.

[18 AAC 50.040(a), 1/18/97]  
[Federal Citation: 40 CFR §60.11(d)]

- 15.** For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of the standard set forth in conditions 12, 13, 29, and 33-35, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether Source IDs 8, and 30-32 would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[18 AAC 50.040(a)(1), 1/18/97]  
[Federal Citation: 40 C.F.R. 60.11(g), 10/15/73]

- 16.** The Permittee shall not build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of a standard set forth in conditions 12, 13, 29, and 33-35. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard that is based on the concentration of a pollutant in the gases discharged to the atmosphere.

[18 AAC 50.040(a)(1), 1/18/97]  
[Federal Citation: 40 C.F.R. 60.12, 10/15/73]

## Waste Oil Boilers

**Caution: Compliance with the requirements of the following conditions will ensure compliance with the applicable requirements of 18 AAC 50. This permit does not ensure compliance with other applicable state or federal laws concerning management, use, or disposal of used oil.**

These conditions apply to the two Columbia Boilers (source IDs 13 and 14) at the facility.

### *Visible Emissions*

- 17.** Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from Source IDs 13 and 14 to reduce visibility through the exhaust effluent by greater than 20% for more than three minutes in any one hour.

[18 AAC 50.055(a)(1), 1/18/97]  
[18 AAC 50.350(d), 6/21/98]

Monitor, record and report according to Section 12.

[18 AAC 50.350(g-i), 1/18/97]

*Particulate Matter and Hazardous Air Pollutant Emissions*

- 18.** Permittee shall not cause or allow particulate matter emitted from Source IDs 13 and 14 to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.

[18 AAC 50.055(b)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

18.1 Monitor, record and report according to Section 12.

[18 AAC 50.350(g-i), 1/18/97]

18.2 Once permittee has demonstrated compliance with the 0.05 gr/dscf grain loading standard when firing with a high ash unblended used oil Condition 18.3a no longer applies.

18.3 The permittee may blend used oil as described below

- a. Compliance with the particulate matter emission standard of condition 4 is assured by blending or co-firing used oil with virgin fuel that limits the used oil content to less than 50 percent by volume. The permittee shall perform fuel blending or co-firing using a metering system or other reproducible method accurate to  $\pm 5$  percent.
- b. At least annually the stored used oil must be sampled and analyzed using SW-846 test methods for arsenic, lead, cadmium, chromium, total halogens, flash point, polychlorinated biphenyls (PCBs), and sulfur in a representative sample of the used oil generated by the permittee prior to blending with the virgin fuel oil.
- c. The permittee shall use the analysis in 18.3b above to appropriately blend fuel such that it meets the specifications in 18.3d below.
- d. The used oil must meet the following specifications: \*
  - (i) Flash point greater than 100°F; and concentrations of
  - (ii) Polychlorinated Biphenyls (PCBs) no higher than 50 ppm,
  - (iii) Total Halogens no higher than 1000 ppm,
  - (iv) Arsenic no higher than 5 ppm,
  - (v) Cadmium no higher than 2 ppm,

(vi) Chromium no higher than 10 ppm, and

(vii) Lead no higher than 100 ppm

\*Meeting these specifications will satisfy the requirements of 18 AAC 50.110. Compliance with these requirements does not insure compliance with other applicable state or federal laws concerning management and disposal of used oil.

[18 AAC 50.030 and 18 AAC 50.110, 1/18/97]

- e. For each batch of used oil to be burned, record the quantity of used oil and the quantity of virgin fuel oil blended together or co-fired.
- f. Report under condition 67 whenever the fuel blending or co-firing ratio does not meet the requirements of conditions 18.3a, 18.3c and 18.3d. When reporting under this condition, include source test data collected according to Section 9 showing particulate matter emissions.
- g. Maintain a record of the total gallons of used oil burned in each calendar year, and report according to condition 69.

[18 AAC 50.350(g-l), 1/18/97]

#### *Sulfur Dioxide*

- 19.** Permittee shall not cause or allow sulfur compound emissions, expressed as SO<sub>2</sub>, from source IDs 13 and 14 to exceed 500 PPM averaged over three hours.

[18 AAC 50.055(c), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

- 19.1 Permittee may burn DF-1, DF-2, or used oil in Source IDs 13 and 14 and energy recovery heaters. Any oil burned in these sources shall have a sulfur content less than the amount that would emit 500 PPM sulfur compound emissions, expressed as SO<sub>2</sub>, as determined by the material balance equation given in Section 14.

[18 AAC 50.055(c), 1/18/97]

- 19.2 Permittee shall sample the used oil from the common line between the waste oil storage tanks and the waste oil boilers (source IDs 13 and 14) to determine its sulfur content, using the methods specified in condition 5.2 prior to burning the used oil.

- 19.3 Permittee shall sample the used oil to determine its sulfur content as described below:

- a. samples shall be collected and analyzed monthly from the common line;

- b. if, at any time, the analytical results from the common line shows the sulfur content of the used oil is greater than 80% of the amount that would cause emissions of 500 PPM SO<sub>2</sub>, as determined by the material balance equation given in Section 14, the Permittee shall increase the sampling frequency to weekly until such time as six consecutive analyses show sulfur contents less than or equal to 80%; at that time Permittee may revert the sampling and analysis frequency to monthly as specified in condition 19.3a;
- 19.4 Keep records of the analyses performed under condition 19.1 and the material balance calculations performed under condition 19.5.
- 19.5 Report under condition 67 whenever any oil analysis from condition 19.1 does not meet the requirements of condition 19.3b. When reporting under this condition, include a material balance calculation of the sulfur compound emissions, in PPM, made in accordance with Section 14.
- 19.6 Include in the report required by condition 69 a listing of the sulfur contents of the oil consumed in source IDs 13 and 14 determined by condition 19.1.
- 19.7 Maintain a record of the total gallons of used oil burned in each calendar year, and report according to condition 69.
- 19.8 Report under condition 67 if a sulfur dioxide three-hour exhaust concentration, calculated pursuant to condition 19.5, is greater than 500 PPM.

[18 AAC 50.350(g-i), 1/18/97]

## Solid Waste Incinerator

### *Visible Emissions*

- 20. Visibility through the exhaust effluent from the solid waste incinerator (source ID 27) may not be reduced by visible emissions, excluding condensed water vapor, by more than twenty percent (20%) for a total of more than three minutes in any one-hour period.

[18 AAC 50.050(a)(2), 1/18/97]  
[18 AAC 50.350(d), 6/21/98]
- 20.1 Permittee shall evaluate and record the visible emissions from the incinerator, while it is operating, for fifteen minutes once each month using the procedures in Section 13. If four (4) or more individual opacity readings exceed 20% during the fifteen-minute reading period, Permittee shall continue reading the opacity for one hour.

[18 AAC 50.350(g-h), 1/18/97]
- 20.2 Permittee shall submit a report under condition 67 when, at any time, the observed opacity of the emissions from the incinerator exceeds the limit set forth in this condition.

[18 AAC 50.350(i), 1/18/97]

- 20.3 Permittee shall submit copies of all opacity forms completed in accordance with condition 20.1 with the report required under condition 69 along with a summary of reports submitted under condition 20.2.

[18 AAC 50.350(i), 1/18/97]

*Permit 9531-AA007 Requirements*

21. Permittee shall not burn any used oil or hazardous waste, as defined by 18 AAC §60, 18 AAC §63, or 40 CFR §261 in the solid waste incinerator.

[18 AAC 50.350(d)(1)(D), 1/18/97]  
[AQC Permit No. 9531-AA007, 11/13/95]

**Induction Furnace**

*Visible Emissions*

22. Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from source ID 28 to reduce visibility through the exhaust effluent by greater than 20% for more than three minutes in any hour.

[18 AAC 50.055(a)(1), 1/18/97]  
[18 AAC 50.350(d), 1/18/97]

- 22.1 Permittee shall comply with this condition by operating and maintaining a fabric filter system with a manufacturer's guaranteed emission rate no greater than 0.01 grains of particulate matter per dry standard cubic foot of exhaust gas.

- a. Permittee shall maintain a copy of the fabric filter manufacturer's guaranteed emission rate certification.
- b. Permittee shall inspect the baghouse every 30 days of operation and replace any damaged or worn bags.
- c. Permittee shall keep a maintenance log of all baghouse inspections and bag replacement.

- 22.2 Permittee shall comply with this condition by maintaining a pressure differential across the fabric filter system as specified by the manufacturer or parameters from the latest source test demonstrating compliance and by ensuring no visible emissions are contained in the fabric filter exhaust.

- a. Permittee shall record, at least daily, the pressure differential across the fabric filter system.

- b. Permittee shall initiate corrective action (non-routine maintenance) whenever the pressure differential across this fabric filter system is outside the range specified in condition 22.2 or whenever visible emissions are observed from the fabric filter exhaust. The corrective action shall be adequate to eliminate any visible emissions and to return the fabric filter's operation to the specified pressure differential range.
- c. Permittee shall record the date and nature of any observed visible emissions and any deviation from the requirement to operate the fabric filter system in accordance with Condition 22.2. Permittee shall record any corrective actions taken under condition 22.2b. Permittee shall report any deviations or corrective actions per condition 67.

22.3 Permittee shall maintain records of all routine and non-routine fabric filter system maintenance. In addition, Permittee shall submit a summary of this maintenance as well as a summary of reports submitted pursuant to condition 22.2c in the report required by condition 69.

[18 AAC 50.350(g-i), 1/18/97]

#### *Particulate Matter*

- 23.** Permittee shall not cause or allow particulate matter emitted from source ID 28 to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.

[18 AAC 50.055(b)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

- 23.1 Compliance with conditions 22.1 through 22.3 shall constitute compliance with this condition.

[18 AAC 50.350(g-i), 1/18/97]

#### **Lime Silo**

##### *Visible Emissions*

- 24.** Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from source ID 33 to reduce visibility through the exhaust effluent by greater than 20% for more than three minutes in any hour.

[18 AAC 50.055(a)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

- 24.1 Permittee shall comply with this condition by operating and maintaining a fabric filter system with a manufacturer's guaranteed emission rate no greater than 0.01 grains of particulate matter per dry standard cubic foot of exhaust gas.

- a. Permittee shall maintain a copy of the fabric filter manufacturer's guaranteed emission rate certification.
  - b. Permittee shall inspect the baghouse every 30 days of operation and replace any damaged or worn bags.
- 24.2 Permittee shall, for 15 consecutive minutes each month, read and record the opacity of the exhaust from this source's fabric filter system using EPA reference method 9. Permittee may use the form contained in Section 13 of this permit for recording the visible emissions evaluations. If four (4) or more individual opacity readings exceed 20% during the fifteen-minute reading period, Permittee shall continue reading the opacity for one hour.
- 24.3 Permittee shall initiate corrective action (non-routine maintenance) if any visible emissions are observed exceeding the standard contained in condition 24. The corrective action shall be sufficient to reduce the visible emissions from the fabric filter system exhaust to below the standard contained in condition 24. Permittee shall, immediately after taking corrective action, read and record the opacity for an additional 15 minutes or one hour consistent with condition 24.2.
- 24.4 Permittee shall record any corrective actions taken under condition 24.3.
- 24.5 Permittee shall maintain records of all routine and non-routine fabric filter system maintenance. In addition, Permittee shall submit a summary of this maintenance as well as any corrective actions taken pursuant to condition 24.4 in the report required by condition 69.

[18 AAC 50.350(g-i), 1/18/97]

*Particulate Matter*

- 25.** Permittee shall not cause or allow particulate matter emitted from source ID 33 to exceed 0.05 grains per dry standard cubic foot of exhaust gas averaged over three hours.

[18 AAC 50.055(b)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

- 25.1 Compliance with conditions 24.1 through 24.5 shall constitute compliance with this condition.

[18 AAC 50.350(g-i), 1/18/97]

## Carbon Regeneration Kiln

### *Visible Emissions*

- 26.** Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from source ID 29 to reduce visibility through the exhaust effluent by greater than 20% for more than three minutes in any hour.

[18 AAC 50.055(a)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

- 26.1 Permittee shall determine the opacity of emissions from this source monthly using the procedures in Section 13. Permittee must collect the opacity readings while the source is operating and the duration of the readings must be for a minimum of 15 minutes. If four (4) or more individual opacity readings exceed 20% during the fifteen-minute reading period, Permittee shall continue reading the opacity for one hour.
- 26.2 Permittee shall record the opacity readings required by condition 26.1 using the form in Section 13 of this permit. Permittee shall also calculate the 15-minute or one-hour average opacity observed and record it on the same form. These readings shall be kept on-site in a location readily accessible to personnel should the Department or EPA request to see them.
- 26.3 Permittee shall submit a report under condition 67 if more than 12 of the individual opacity readings collected pursuant to condition 26.1 exceed 20%.
- 26.4 Permittee shall summarize the results of the monthly readings, as well as a summary of any reports submitted under 26.3 above, in the report submitted under condition 69.

[18 AAC 50.350(g-i), 1/19/97]

### *Particulate Matter*

- 27.** Permittee shall not cause or allow particulate matter emitted from source ID 29 to exceed 0.05 grains per dry standard cubic foot of exhaust gas averaged over three hours.

[18 AAC 50.055(b)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

- 27.1 Within 12 months of the effective date of this permit, Permittee shall conduct source testing to quantify the particulate matter emission rate from source ID 29.
- a. The particulate matter source testing shall be conducted pursuant to the requirements of Section 9 of this permit.
- b. Permittee shall collect 60 minutes of opacity readings per Section 13 during each hour of particulate sampling.

27.2 After successful completion of the testing conducted under condition 27.1, compliance with this condition shall thereafter be demonstrated as follows:

- a. if the three-hour average particulate emission rate is 0.040 grains per dry standard cubic foot of exhaust gas (gr/dscf) or higher, 15-minute or one-hour average opacity readings collected pursuant to condition 26.1 that are less than or equal to the three-hour average opacity collected pursuant to condition 27.1b (during the source test) shall serve as a demonstration of compliance with this condition;
- b. if the three-hour average particulate emission rate is equal to or greater than 0.025 gr/dscf but less than 0.040 gr/dscf, 15-minute or one-hour average opacity readings collected pursuant to condition 26.1 that are within 5% of the three-hour average opacity during the source test shall serve as a demonstration of compliance with this condition (e.g., if the three-hour average opacity during the source test is 10%, then 15 minute average opacities collected under condition 26.1 no higher than 15% shall serve as a compliance demonstration for the particulate standard);
- c. if the three-hour average particulate emission rate is equal to or greater than 0.015 gr/dscf but less than 0.025 gr/dscf, 15-minute or one-hour average opacity readings collected pursuant to condition 26.1 that are within 10% of the three-hour average opacity during the source test shall serve as a demonstration of compliance with this condition (e.g., if the three-hour average opacity during the source test is 5%, then any 15-minute average opacities collected under condition 26.1 no higher than 15% shall serve as a compliance demonstration for the particulate standard);
- d. if the particulate emission rate is less than 0.015 gr/dscf, compliance with the opacity standard of condition 26 shall constitute compliance with this condition.

[18 AAC 50.350(g), 1/18/97]

27.3 If a monthly opacity reading recorded pursuant to condition 26 exceeds the level specified by condition 27.2, Permittee shall conduct source testing within 45 days of the excess opacity observation. This testing shall be in accordance with the procedures in condition 27.1 in order to establish a new opacity/particulate matter correlation if necessary.

[18 AAC 50.350(g), 1/18/97]

27.4 In the report submitted pursuant to condition 69, Permittee shall, for this source, list the measured particulate emission rate and the source test-observed three-hour average opacity and provide the monthly average opacity readings collected pursuant to condition 26.1.

[18 AAC 50.350(i), 1/18/97]

## Volatile Organic Liquid Storage Vessels

### *New Source Performance Standard (40 CFR 60 Subpart Kb) Requirements*

- 28.** For Source IDs 34 and 35, the Permittee shall keep readily accessible records showing the dimension of the fuel storage tank vessel and an analysis showing the capacity of the storage vessel

[18 AAC 50.040(a)(2)(M), 1/18/97]

[Federal Citation: 40 CFR §60.110b(c), 40 CFR §60.116b(b), 7/1/97]

- 29.** The Permittee shall keep copies of the above-required records for the life of the fuel storage tank.

[18 AAC 50.350(i), 1/18/97]

[Federal Citation: 40 CFR §60.110b(c), 40 CFR §60.116b(a), 7/1/97]

## **Section 6. Facility-Wide Requirements**

### *PSD Avoidance Limits*

- 30.** Permittee shall not emit more than 134.9 tons of nitrogen oxides per year in order to preclude classification of the facility as “Prevention of Significant Deterioration Major” under 18 AAC 50.300(c)(1).

[18 AAC 50.350(e)(3), 1/18/97]  
[Air Quality Control Permit No. 9531-AA007]

Permittee shall comply with this limit by complying with conditions 6, 7, and 31.

[18 AAC 50.350(g-i), 1/18/97]

- 31.** Permittee shall limit the combined total fuel consumption in the solid waste incinerator and in all the facility fuel oil-burning boilers and heaters, whether significant or insignificant pursuant to 18 AAC 50.335(q), to no more than 1,026,896 gallons of fuel in any rolling twelve-month period. This condition does not apply to the waste oil boilers (source IDs 13 and 14).

[18 AAC 50.350(e)(3), 1/18/97]  
[Air Quality Control Permit No. 9531-AA007]

- 31.1** Permittee shall monitor compliance with this condition by equating the fuel consumption in these sources with the total volume of fuel delivered in the same rolling twelve-month period to the following fuel sources at the facility:

- a. Storage Tank 2 (source ID 35 on Table 1);
- b. Heating Oil Tank 1 (source ID 36 on Table 1);
- c. the 2000 gallon fuel oil storage tank at the Detox building; and
- d. the 1000 gallon fuel oil storage tank at the electrical substation (the building housing source IDs 1-4).
- e. all other fuel sources.

- 31.2** Permittee shall keep records of each fuel delivery to each of the tanks in conditions 31.1a through 31.1d. These records shall include the volume of fuel and the fuel type delivered (i.e., diesel no. 1, diesel no. 2, etc.).

[18 AAC 50.350(g-h), 1/18/97]

- 31.3** Report in accordance with condition 69 the monthly fuel consumption and the rolling twelve-month total fuel consumption for each month of the six-month operating report period for the sources regulated by this condition.

[18 AAC 50.350(i), 1/18/97]

- 31.4 Report in accordance with condition 67 if the actual fuel usage of these sources exceeds the limit set forth in this condition in any rolling twelve-month period.

[18 AAC 50.350(i), 1/18/97]

*New Source Performance Standard (40 CFR 60 Subpart LL) Requirements*

- 32.** The emissions from the five fabric filter systems that serve source IDs 30-32 (the primary and cone crushers and the reclaim tunnel) shall not contain particulate matter in excess of 0.05 grams per dry standard cubic meter (0.022 grains per dry standard cubic foot).

[18 AAC 50.350(d), 1/18/97]

[40 CFR §60.382(a)(1), 1999]

- 32.1 Permittee shall comply with this condition by operating and maintaining the five fabric filter systems with a manufacturer's guaranteed emission rate no greater than 0.01 grains of particulate matter per dry standard cubic foot of exhaust gas.

- a. Permittee shall maintain a copy of each fabric filter manufacturer's guaranteed emission rate certification for the filters employed in each fabric filter system.
- b. Permittee shall inspect the baghouse every 30 days of operation and replace any damaged or worn bags.

- 32.2 Permittee shall monitor the pressure differential across each fabric filter system to ensure the pressure differentials are maintained as specified by the manufacturer or parameters from the latest source test demonstrating compliance.

- 32.3 Permittee shall record, at least daily, the pressure differentials across each fabric filter system.

- 32.4 Permittee shall observe the stack exhausts for 5 consecutive minutes monthly using EPA reference method 22. Permittee shall record these observations.

- 32.5 Permittee shall initiate corrective action (non-routine maintenance) whenever the pressure differential across any fabric filter system referenced in condition 32.2 is not within the manufacturer's specification or if any visible emissions are observed in the monthly monitoring required by condition 32.4. This corrective action shall be adequate to return the fabric filter system's operation to eliminate visible emissions.

- 32.6 Permittee shall record the date and nature of any deviations from the standards in condition 32.2 as well as any corrective actions taken under condition 32.5. Permittee shall report any deviations or corrective actions per condition 67.

- 32.7 Permittee shall maintain records of all routine and non-routine fabric filter system maintenance. In addition, Permittee shall submit a summary of this maintenance as well as a summary of reports submitted pursuant to condition 32.6 in the report required by condition 69.

[18 AAC 50.350(g-i), 1/18/97]

- 33.** The emissions from the five fabric filter systems that serve source IDs 30-32 (the primary and cone crushers and the reclaim tunnel) shall not exhibit greater than 7 percent opacity.

[18 AAC 50.040(a)(2)(E), 1/18/97]

[40 CFR §60.382(a)(2), 1999]

- 33.1 Compliance with conditions 32.1 through 32.7 shall constitute compliance with this condition.

[18 AAC 50.350(g-i), 1/18/97]

- 34.** Any process fugitive emissions (i.e., those emissions from the elevators, aprons, transfer points, the discharge from the lime silo to the conveyor, storage bins, enclosed storage areas, and loading stations) shall not exhibit greater than 10 percent opacity as a six-minute average.

[18 AAC 50.040(a)(2)(X), 1/18/97]

[40 CFR §60.382(b), 1999]

- 34.1 Permittee shall read the opacity using method 9 for at least 24 consecutive minutes monthly from the following locations:

- a. the overhead door opening in the primary crusher building where trucks unload the material collected at the pit(s);
- b. at the opening on each side of the reclaim tunnel (if there are multiple openings, select the opening exhibiting the greatest level of opacity);
- c. at the point of greatest observed opacity on the above ground conveyor between the reclaim tunnel and the drive tower; and
- d. at the point where lime is discharged from the silo onto the conveyor entering the mill.

- 34.2 Permittee shall record the opacity readings required by condition 34.1 using the form in Section 13 of this permit. These readings shall be kept on-site in a location readily accessible to personnel should the Department or EPA request to see them.

- 34.3 Permittee shall submit a report under condition 67 if any six-minute average opacity reading is observed to exceed 10%.

- 34.4 Permittee shall summarize the results of the monthly readings, as well as a summary of any reports submitted under 34.3 above, in the report submitted pursuant to condition 69.

[18 AAC 50.350(g-i), 1/19/97]

*State Visible Emission Standard*

- 35.** Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from source IDs 30 and 31 (the primary and cone crushers) to reduce visibility by greater than 20% for more than three minutes in any one-hour period.

[18 AAC 50.055(a)(1), 1/18/97]  
[18 AAC 50.350(d), 6/21/98]

- 35.1 Compliance with conditions 32.1 through 32.7 shall constitute compliance with this condition.

[18 AAC 50.350(g-i), 1/18/97]

*State Particulate Matter Standard*

- 36.** Permittee shall not cause or allow particulate matter emitted from source IDs 30 and 31 (the primary and cone crushers) to exceed 0.05 grains per dry standard cubic foot of exhaust gas averaged over three hours.

[18 AAC 50.055(b)(1), 1/18/97]  
[18 AAC 50.350(d), 6/21/98]

- 36.1 Compliance with conditions 32.1 through 32.7 shall constitute compliance with this condition.

[18 AAC 50.350(g-i), 1/18/97]

*Permit 9531-AA007 Requirements*

- 37.** Permittee shall post and maintain signs on likely public access routes onto facility property for the purpose of restricting public access to the facility. The signs shall conform to the following specifications:

- 37.1 Each sign must be free of visible obstructions, with at least one sign located within 15 yards of any trails or roads entering the facility and within 5 yards of any year-round stream. Any additional signs must be posted at approximately 100-yard intervals, perpendicular to the potential access route.

- 37.2 The signs must be approximately 2 feet by 3 feet or larger and worded as follows:

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**- NOTICE -**

**ENTERING AN INDUSTRIAL AIR ZONE  
OPEN PIT MINING AND BLASTING IN PROGRESS**

**PUBLIC ACCESS RESTRICTED**

**FOR MORE INFORMATION CALL:**

FAIRBANKS GOLD MINING, INC.

907-488-4653

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37.3 Signs must be inspected at least semi-annually, and repaired or replaced as needed.

37.4 Permittee shall keep records of the inspections and any repairs or replacements.

[AQC Permit No. 9531-AA007, 11/13/95]

[18 AAC 50.350(d), 6/21/98]

[18 AAC 50.350(g-h), 1/18/97]

- 38.** Permittee shall burn no material meeting the definition of a Hazardous Waste under 40 CFR §261 or 18 AAC 62 in any fuel burning or other equipment at the facility.

[18 AAC 50.350(d)(1)(D), 1/18/97]

[AQC Permit No. 9531-AA007]

- 39.** Permittee shall reduce water emissions if the Department determines that ice fog conditions exist which warrant the reduction.

[18 AAC 50.350(d)(1)(D), 1/18/97]

[AQC Permit No. 9531-AA007, 11/13/95]

- 40.** Permittee shall submit a Risk Management Plan to EPA as necessary to comply with 40 CFR §68 .

[40 CFR §68.215, 1997]

**Section 7. Insignificant Sources**

This section contains the requirements that the Permittee identified under 18 AAC 50.335(q)(2) as applicable to insignificant sources at the facility. This section also specifies the testing, monitoring, reporting, and recordkeeping for insignificant sources that the department finds necessary to ensure compliance with the applicable requirements. Insignificant sources are not exempted from any air quality control requirement or federally enforceable requirement, except that the requirements of conditions 67 and 69 of this permit do not apply to this section.

As set out in 18 AAC 50.350(m), the shield of AS 46.14.290 does not apply to insignificant sources.

- 41.** The Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from an industrial process, fuel-burning equipment, or an incinerator to reduce visibility through the exhaust effluent by greater than 20% for more than three minutes in any one hour.

[18 AAC 50.055(a)(1) and 18 AAC 50.050(a)(2), 1/18/97]

- 42.** The Permittee shall not cause or allow particulate matter emitted from an industrial process or fuel-burning equipment to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.

[18 AAC 50.055(b)(1), 1/18/97]

- 43.** The Permittee shall not cause or allow sulfur compound emissions, expressed as SO<sub>2</sub>, from an industrial process or fuel-burning equipment, to exceed 500 PPM averaged over three hours.

[18 AAC 50.055(c), 1/18/97]

- 44.** Based on reasonable inquiry, the Permittee shall certify compliance with the requirements specified in conditions 41, 42, and 43 as set out in condition 70 of this permit.

[18 AAC 50.350(m)(3), 9/4/98]

**Section 8. Generally Applicable Requirements**

- 45. Asbestos NESHAP.** The Permittee shall comply with the requirements set forth in 40 CFR §61.145, §61.150, and §61.152, and the applicable sections set forth in 40 CFR §61, Subpart A and Appendix A.

[18 AAC 50.040(b)(3) & 18 AAC 50.350(d)(1), 1/18/97]  
[Federal Citation: 40 CFR §61, Subpart M, 12/19/96]

- 46. Refrigerant Recycling and Disposal.** The Permittee shall comply with the standards for recycling and emission reduction of refrigerants set forth in 40 CFR §82, Subpart F.

[18 AAC 50.040(d) & 18 AAC 50.350(d)(1), 1/18/97]  
[Federal Citation: 40 CFR §82, Subpart F, 7/1/97]

- 47. Dilution.** The Permittee shall not dilute emissions with air to comply with this permit.

[18 AAC 50.045(a), 1/18/97]

47.1 Check all ductwork and exhaust systems for leaks, and repair any leaks found

- a. No sooner than 30 days prior to conducting a source test to demonstrate compliance with this permit,
- b. Once during the first six months of this permit and every 17,520 hours of source operation thereafter for sources subject to visible emission observations conducted pursuant to Section 12 of this permit, and
- c. Once during the life of this permit for any other source regulated by this permit.

[18 AAC 50.350(g), 1/18/97]

47.2 Keep records of all inspections and repairs performed under this condition.

[18 AAC 50.350(h), 1/18/97]

47.3 Upon request of the department, submit copies of the records.

[18 AAC 50.350(i), 1/18/97]

- 48. Modification.** The Permittee shall not construct, operate, or modify a source that will result in a violation of the applicable emission standards or that will interfere with the attainment or maintenance of the ambient air quality standards or maximum allowable ambient concentrations.

[18 AAC 50.045(c), 1/18/97]

48.1 Obtain all permits or permit revisions required for construction, modification, or operation under 18 AAC 50 and AS 46.14.

[18 AAC 50, Article 3, 1/18/97]

48.2 Comply with the conditions of all permits obtained under 18 AAC 50 and AS 46.14.

[18 AAC 50, Article 3, 1/18/97]

**49. Bulk Materials Handling, Construction and Industrial Activities.** The Permittee shall take reasonable precautions to prevent particulate matter from being emitted into the ambient air as a result of industrial activities, construction projects, or the handling, transportation, and storage of bulk materials.

[18 AAC 50.040(e), 18 AAC 50.045(d), & 18 AAC 50.350(d)(1), 1/18/97]

49.1 Keep records describing all precautions taken to prevent particulate matter from becoming airborne due to any of the activities described in this condition. If the precautions taken by the Permittee are not listed in the State Air Quality Control Plan, also record a statement describing why the Permittee finds the precaution reasonable. Reasonable precautions, as listed in the State Air Quality Control Plan, include

- a. installation and use of hoods, fans, and dust collectors to enclose and vent the handling of dusty materials;
- b. use of water or chemicals for dust control in the demolition of existing structures, construction operations, road grading, or land clearing; and
- c. application of asphalt, oil, water, or suitable chemicals on dirt roads, material stockpiles and other surfaces which can create airborne dusts.

[18 AAC 50.040(e) & 18 AAC 50.350(g – h), 1/18/97]

49.2 At least once each month, perform visual surveys of fugitive particulate matter sources as follows:

- a. Conduct a survey of all bulk materials handling, construction, and industrial activities at the facility for the potential of airborne particulate matter in accordance with the procedures listed in 40 CFR §60, Appendix A, RM 22.
- b. Within 2 days of discovering that particulate matter emissions are leaving the property at a level which potentially could unreasonably interfere with the enjoyment of life or property, be injurious to human health or welfare, animal or plant life, or property, or cause an exceedance of a PM-10 ambient air quality standard or increment contained in 18 AAC 50.010(1) or 18 AAC 50.010(b)(2), initiate corrective actions to prevent emissions from leaving the property.
- c. Keep contemporaneous records of all visual surveys performed and corrective actions taken to prevent particulate matter emissions from leaving the property. Submit summaries of the records with the report required by condition 69 of this permit.

- d. Report per condition 67 whenever a visual survey reveals that particulate matter emissions at levels specified in condition 49.2b are leaving the property.

[18 AAC 50.350(g - i), 1/18/97]

- 50. Stack Injection.** The Permittee shall not release materials other than process emissions, products of combustion, or materials introduced to control pollutant emissions from a stack at a source constructed or modified after November 1, 1982, unless approved in writing by the department.

[18 AAC 50.055(g) and 18 AAC 50.310(m), 1/18/97]

- 51. Open Burning.** The Permittee shall comply with the following requirements when conducting open burning at the facility:

- 51.1 Open burning of asphalts, rubber products, plastics, tars, oils, oily wastes, contaminated oil cleanup materials, or other materials in a way that gives off black smoke is prohibited without written approval of the department in accordance with the procedures set forth in 18 AAC 50.065.

[18 AAC 50.040(e), 18 AAC 50.065(b), & 18 AAC 50.350(d)(1), 1/18/97]

- 51.2 Open burning or incineration of pesticides, halogenated organic compounds, cyanic compounds, or polyurethane products in a way that gives off black smoke or acidic gases or particulate matter is prohibited.

[18 AAC 50.040(e), 18 AAC 50.065(c) & 18 AAC 50.350(d)(1), 1/18/97]

- 51.3 Open burning of putrescible garbage, animal carcasses, or petroleum-based materials, including materials contaminated with petroleum or petroleum derivatives, is prohibited if it causes odor or black smoke that has an adverse effect on nearby persons or property.

[18 AAC 50.040(e), 18 AAC 50.065(d), & 18 AAC 50.350(d)(1), 1/18/97]

- 51.4 Open burning is prohibited in an area if the department declares an air quality advisory under 18 AAC 50.245, stating that open burning is not permitted in that area for the day.

[18 AAC 50.040(e), 18 AAC 50.065(e), & 18 AAC 50.350(d)(1), 1/18/97]

- 51.5 When conducting open burning, the Permittee shall ensure that

- a. The material is kept as dry as possible through the use of cover or dry storage;
    - b. Before igniting the burn, noncombustibles are separated to the greatest extent practicable;
    - c. Natural or artificially induced draft is present;
    - d. To the greatest extent practicable, combustibles are separated from grass or peat layer;

- e. Combustibles are not allowed to smolder; and
- f. Sufficient written records are kept to demonstrate that the Permittee complies with the limitations in this condition. Upon request of the department, submit copies of the records.

[18 AAC 50.040(e), 18 AAC 50.065(a), 18 AAC 50.350(d)(1) & 18 AAC 50.335(g - h), 1/18/97]

**52. Air Pollution Prohibited.** The Permittee shall not cause any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.

[18 AAC 50.110, 5/26/72; 18 AAC 50.040(e), & 18 AAC 50.350(d)(1), 1/18/97]

- 52.1 Within 24 hours of receiving a complaint that is attributable to emissions from the facility, investigate the complaint and, upon determination that the complaint may be attributable to emissions from the facility, initiate corrective actions to alleviate or eliminate the cause of the complaint.

[18 AAC 50.350(g), 1/18/97]

- 52.2 Keep records of the date, time, and nature of all complaints received and summary of the investigation and corrective actions undertaken for complaints attributable to emissions from the facility. Upon request of the department, submit copies of the records.

[18 AAC 50.350(h - i), 1/18/97]

**53. Technology-Based Emission Standard.** If an unavoidable emergency, malfunction, or non-routine repair, as defined in 18 AAC 50.235, causes emissions in excess of a technology-based emission standard listed in conditions 12, 32, 33, and 34, the Permittee shall take all reasonable steps to minimize levels of emissions that exceed the standard.

[18 AAC 50.235(a), 1/18/97]

**54. Permit Renewal:** To renew this permit, the Permittee shall submit a complete application under 18 AAC 50.335 **no sooner than April 18, 2004, and no later than April 18, 2005.**

[18 AAC 50.335(a), 1/18/97]

**Section 9. General Source Testing and Monitoring Requirements**

- 55. Requested Source Tests.** In addition to any source testing explicitly required by this permit, the Permittee shall conduct source testing as requested by the department to determine compliance with applicable permit requirements.

[18 AAC 50.220(a), 18 AAC 50.345(a)(10), 1/18/97]

- 56. Operating Conditions.** Unless otherwise specified by an applicable requirement or test method, the Permittee shall conduct source testing

56.1 At a point or points that characterize the actual discharge to into the ambient air; and

56.2 At the maximum rated burning or operating capacity of the source or another rate determined by the department to characterize the actual discharge into the ambient air.

[18 AAC 50.220(b) & 18 AAC 50.350(g), 1/18/97]

- 57. Reference Test Methods.** The Permittee shall use the following as reference test methods when conducting source testing for compliance with this permit:

57.1 Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(a) must be conducted in accordance with the methods and procedures specified in 40 CFR §60.

[18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]

57.2 Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(b) must be conducted in accordance with the methods and procedures specified in 40 CFR §61.

[18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]

57.3 Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(c) must be conducted in accordance with the source test methods and procedures specified in 40 CFR §63.

[18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]

57.4 Source testing for the reduction in visibility through the exhaust effluent must be conducted in accordance with the procedures set out in Section 13 of this permit.

[18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]

57.5 Source testing for emissions of particulate matter, sulfur compounds, nitrogen compounds, carbon monoxide, lead, volatile organic compounds, fluorides, sulfuric acid mist, municipal waste combustor organics, metals, and acid gases must be conducted in accordance with the methods and procedures specified 40 CFR §60, Appendix A.

[18 AAC 50.220(c), 18 AAC 50.040 & 18 AAC 50.350(g), 1/18/97]

57.6 Source testing for emissions of PM-10 must be conducted in accordance with the procedures specified in 40 CFR §51, Appendix M.

[18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]

57.7 Source testing for emissions of any contaminant may be determined using an alternative method approved by the department in accordance with Method 301 in Appendix A to 40 CFR §63.

[18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]

**58. Excess Air Requirements.** To determine compliance with this permit, standard exhaust gas volumes must only include the volume of gases formed from the theoretical combustion of fuel, plus the excess air volume normal for the specific source type, corrected to standard conditions (dry gas at 70° F and an absolute pressure of 760 millimeters of mercury).

[18 AAC 50.990(88), 18 AAC 50.220(c)(3) & 18 AAC 50.350(g), 1/18/97]

**59. Test Plans.** Before conducting any source tests, the Permittee shall submit a plan to the Department. The plan must include the methods and procedures to be used for sampling, testing, and quality assurance, and must specify how the source will operate during the test and how the Permittee will document this operation. A complete plan must be submitted within 60 days of receiving a request under condition 55 and at least 30 days before the scheduled date of any tests.

[18 AAC 50.345(a)(10), 18 AAC 50.350(b)(3) & 18 AAC 50.350(g), 1/18/97]

**60. Test Notification.** At least 10 days before conducting a source test, the Permittee shall give the Department written notice of the date and time the source test will begin.

[18 AAC 50.345(a)(10), 18 AAC 50.350(b)(3) & 18 AAC 50.335(g), 1/18/97]

**61. Test Reports.** Within 45 days after completing a source test, the Permittee shall submit two copies of the results, to the extent practical, in the format set out in the *Source Test Report Outline* of Volume III, Section IV.3, of the State Air Quality Control Plan, adopted by reference in 18 AAC 50.030(8). The Permittee shall certify the results as set out in condition 63 of this permit.

[18 AAC 50.345(a)(10), 18 AAC 50.350(b)(3) & 18 AAC 50.350(h), 1/18/97]

**62. Particulate Matter Calculations.** In source testing for compliance with the particulate matter standards in conditions 5, 10, 19, 24, 26, 28, 37, & 43, the three-hour average is determined using the average of three one-hour test runs. The source testing must account for those emissions caused by soot blowing, grate cleaning, or other routine maintenance activities by ensuring that at least one test run includes the emissions caused by the routine maintenance activity and is conducted under conditions that lead to representative emissions from that activity. The emissions must be quantified using the following equation:

$$E = E_M \left[ (A + B) \times \frac{S}{R \times A} \right] + E_{NM} \left[ \frac{(R - S)}{R} - \frac{B \times S}{R \times A} \right]$$

Where:

- E= the total particulate matter emissions of the source in grains per dry standard cubic foot (gr./dscf)
- E<sub>M</sub>= the particulate matter emissions in gr./dscf measured during the test that included the routine maintenance activity.
- E<sub>NM</sub>= the arithmetic average of particulate emissions in gr./dscf measured during by the test runs that did not include the maintenance activity.
- A= the period of routine maintenance activity occurring during the test run that included routine maintenance activity, expressed to the nearest hundredth of an hour.
- B= the total period of the test run, less A.
- R= the maximum period of source operation per 24 hours, expressed to the nearest hundredth of an hour.
- S= the maximum period of routine maintenance activity per 24 hours, expressed to the nearest hundredth of an hour.

[18 AAC 50.220(f) & 18 AAC 50.350(g), 1/18/97]

### **Section 10. General Recordkeeping, Reporting, and Compliance Certification Requirements**

- 63. Certification.** The Permittee shall certify all reports, compliance certifications, or other documents submitted to the Department under this permit by including the signature of a responsible official for the permitted facility following the statement: "Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete." For the same six-month reporting period, the excess emission reports submitted per condition 67 may be certified with the operating report required by condition 69 of this permit. All other reports must be certified upon submittal.

[18 AAC 50.205, 18 AAC 50.345(a)(9), 18 AAC 50.350(b)(3) & 18 AAC 50.350(i) 1/18/97]

- 64. Submittals.** Unless otherwise directed by the department or this permit, the Permittee shall send reports, compliance certifications, and other documents required by this permit to ADEC, Air Permits Program, 610 University Avenue, Fairbanks, AK 99709-3643, ATTN: Compliance Technician.

[18 AAC 50.350(i), 1/18/97]

- 65. Information Requests.** The Permittee shall furnish to the Department, within a reasonable time, any information the Department requests in writing to determine whether cause exists to modify, revoke and reissue, or terminate the permit or to determine compliance with the permit. Upon request, the Permittee shall furnish to the Department copies of records required to be kept by this permit. The Department, in its discretion, will require the Permittee to furnish copies of those records directly to the federal administrator.

[18 AAC 50.200, 18 AAC 50.345(a)(8), 18 AAC 50.350(b)(3) & 18 AAC 50.350(g – i), 1/18/97]

- 66. Recordkeeping Requirements.** The Permittee shall keep all records required by this permit for at least five years after the date of collection, including

66.1 Copies of all reports and certifications submitted pursuant to this Section of this permit.

66.2 Records of all monitoring required by this permit, and information about the monitoring including

- a. calibration and maintenance records, original strip chart or computer-based recordings for continuous monitoring instrumentation;
- b. sampling dates and times of sampling and measurements;
- c. the operating conditions that existed at the time of sampling or measurement;
- d. the date analyses were performed;

- e. the location where samples were taken;
- f. the company or entity that performed the sampling and analyses;
- g. the analytical techniques or methods used in the analyses; and
- h. the results of the analyses.

[18 AAC 50.350(h), 1/18/97]

- 67. Excess Emission and Permit Deviation Reports.** The Permittee shall report all emissions or operations that exceed or deviate from the requirements of this permit or that present a potential threat to human health or safety as soon as possible, but no later than 48 hours, after the event commences. The report must include the information listed on the form contained in Section 15 of this permit. The Permittee may use this form to report emissions under this condition.

[18 AAC 50.235(a)(2), 18 AAC 50.240(c) & 18 AAC 50.350(i), 1/18/97]

- 68. NSPS and NESHAP Reports.** The Permittee shall submit to the Department copies of reports required by 40 CFR §60, New Source Performance Standards (NSPS), and 40 CFR §61 and §63, National Emission Standards for Hazardous Air Pollutants (NESHAP), as they apply to the facility as follows:

68.1 Attach a copy of any NSPS and NESHAPs reports submitted to the U.S. Environmental Protection Agency (EPA) Region 10 to the facility Operating Report required by condition 69.

68.2 The Permittee shall notify the Department of any EPA granted waivers of NSPS or NESHAP emission standards, recordkeeping, monitoring, performance testing, or reporting requirements within 30 days after the Permittee receives a waiver.

[18 AAC 50.040, 1/18/97]

[Federal Citation 40 CFR §60 & 40 CFR §61, 7/1/97]

- 69. Facility Operating Reports.** During the life of this permit, the Permittee shall submit an original and two copies of an operating report by August 1 for the period January 1 to June 30, and by February 1 for the period July 1 to December 31. Facility operating reports must include copies of the records required to be reported by the conditions of this permit. In addition, facility operating reports must include a listing of all excess emissions and permit deviations that occurred during the reporting period and must identify

69.1 the date of the deviation;

69.2 the equipment involved;

69.3 the permit condition;

69.4 a description of the deviation; and

69.5 any corrective action or preventive measures taken and the date of such actions.

[18 AAC 50.350(d)(4), (f)(3) & (i), 1/18/97]

**70. Annual Compliance Certification.** Each year by February 1, the Permittee shall compile and submit an original and two copies of an annual compliance certification report as follows:

70.1 For each permit term and condition set forth in Section 3 through Section 10 of this permit, including terms and conditions for monitoring, reporting, and recordkeeping:

- a. certify the compliance status over the preceding calendar year consistent with the monitoring required by this permit;
- b. state whether compliance is intermittent or continuous; and
- c. briefly describe each method used to determine the compliance status.

70.2 Submit a copy of the report directly to the U.S. EPA-Region 10, Office of Air Quality, M/S OAQ-107, 1200 Sixth Avenue, Seattle, WA 98101.

[18 AAC 50.350(j), 1/18/97]

**Section 11. Standard Conditions Not Otherwise Included in the Permit**

- 71.** Consistent with Alaska law, for purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any standard in this permit, nothing in this permit precludes the use of any credible evidence or information relevant to whether the facility would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[18 AAC 50.350(f)(3), 1/18/97]  
[Federal Citation: 40 CFR §52.12(c), 7/1/99]

- 72.** The Permittee must comply with each permit term and condition. Noncompliance constitutes a violation of AS 46.14, 18 AAC 50, and the Clean Air Act, except for those requirements designated as not federally-enforceable, and is grounds for:

72.1 an enforcement action,

72.2 permit termination, revocation and reissuance, or modification in accordance with AS 46.14.280, or

72.3 denial of an operating-permit renewal application.

[18 AAC 50.345(a)(1) & 18 AAC 50.350(b)(3), 1/18/97]

- 73.** It is not a defense in an enforcement action to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with a permit term or condition.

[18 AAC 50.345(a)(2) & 18 AAC 50.350(b)(3), 1/18/97]

- 74.** Each permit term and condition is independent of the permit as a whole and remains valid regardless of a challenge to any other part of this permit.

[18 AAC 50.345(a)(3) & 18 AAC 50.350(b)(3), 1/18/97]

- 75.** Compliance with permit terms and conditions is considered to be compliance with those requirements that are:

75.1 included and specifically identified in the permit, or

75.2 determined in writing in the permit to be inapplicable.

[18 AAC 50.345(a)(4) & 18 AAC 50.350(b)(3), 1/18/97]

- 76.** The permit may be modified, reopened, revoked and reissued, or terminated for cause. A request by the Permittee for modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance does not stay any operating permit condition.

[18 AAC 50.345(a)(5) & 18 AAC 50.350(b)(3), 1/18/97]

**77.** The permit does not convey any property rights of any sort, nor any exclusive privilege.

[18 AAC 50.345(a)(6) & 18 AAC 50.350(b)(3), 1/18/97]

**78.** The Permittee shall allow an officer or employee of the Department or an inspector authorized by the Department, upon presentation of credentials and at reasonable times with the consent of the owner or operator, to:

78.1 enter upon the premises where a source subject to the operating permit is located or where records required by the permit are kept,

78.2 have access to and copy any records required by the permit,

78.3 inspect any facilities, equipment, practices, or operations regulated by or referenced in the permit, and

78.4 sample or monitor substances or parameters to assure compliance with the permit or other applicable requirements.

[18 AAC 50.345(a)(7) & 18 AAC 50.350(b)(3), 1/18/97]

**Section 12. Visible Emissions and Particulate Matter Monitoring Plan****Visible Emissions Observations**

**79.** Except as provided in conditions 80 and 81, the Permittee shall observe the exhaust of each source for visible emissions using either the visible-emission plan in condition 79.1 or the visible-emission plan in condition 79.2. The Permittee may change visible-emission plans for a source at any time.

**79.1 Method-9 Plan.** Within 6 months after the issue date of this permit or within 14 calendar days after changing from the Smoke/No-Smoke Plan condition 79.2, whichever is later, and at least once every 1000 hours that a source operates thereafter, observe its exhaust for 60 minutes to obtain 240 individual 15-second opacity readings in accordance with Section 13; OR

**79.2 Smoke/No-Smoke Plan.** During each calendar day that a source operates, observe the exhaust for the presence or absence of visible emissions, excluding condensed water vapor. Record the following information in a written log for each observation and submit copies of the records upon request of the department:

- a. The date and time of the observation;
- b. From Table 1 of this permit, the ID of the source observed;
- c. Whether visible emissions are present or absent in the exhaust;
- d. If the source starts operation on the day of the observation, the startup time of the source; and
- e. Name, title, and signature of the person making the observation.

**80.** The Permittee may reduce the number of 60 minute observations required by condition 79.1 to one observation for every 4380 hours of source operation, provided that

**80.1** no more than 8 individual 15-second readings during each of the four most recent 60 minute observations conducted during 4,000 hours of operation are greater than 20 percent opacity; AND

**80.2** four or more 60-minute observations are conducted during the 4,000-hour period, at an interval of one observation each 1,000 hours of observation or less.

- 81.** The Permittee may reduce the number of visible emission observations required by condition 79.1 to one observation for every 30 calendar days that a source operates if the source operates without visible emissions in the exhaust during the most recent 30 calendar days that the source operates
- 82.** The Permittee is not required to comply with conditions 59, 60 and 61 (Test Plans, Test Notifications and Test Reports) when the exhaust is observed for visible emissions under conditions 79.1- 79.2.

### Corrective Actions Based on Visible Emissions Observations

- 83.** If visible emissions are present in the exhaust during an observation performed under condition 79.2, the Permittee shall
  - 83.1 Take actions to reduce visible emissions from the source within 24 hours of the observation;
  - 83.2 Keep a written record of the starting date, the completion date, and a description of the actions taken to reduce visible emissions; and
  - 83.3 After completing the actions taken to reduce visible emissions, observe the visible emissions in accordance with condition 79.2. If visible emissions are present in the exhaust during any of the next 30 observations, then observe the exhaust in accordance with condition 79.1 no later than 14 calendar days after the visible emissions are first observed or within 6 months after the issue date of this permit, whichever is later.

### Particulate Matter Testing

- 84.** The Permittee shall conduct tests to determine the concentration of particulate matter in the exhaust of a source as follows:
  - 84.1 Conduct the tests according to the requirements set out in Section 9;
  - 84.2 During each test, observe visible emissions in accordance with Section 13 and calculate the average opacity that was measured during the test. Submit the results of the visible emission observations and the calculation with the source test report.
  - 84.3 Conduct the tests no later than 90 days after any time a 60 minute visible emission observation performed under this section results in
    - a. 13 or more 15-seconds readings with an opacity greater than 20%; or
    - b. a six-minute average opacity that is greater than 12% for a source with an exhaust stack diameter that is less than 21 inches.

## Reporting Requirements

- 85.** The Permittee shall, within 180 calendar days after the effective date of this permit, record and report the exhaust stack diameter of each Source IDs 1 through 14 and 17, and report this information to the department with the first or second facility operating report required by condition 69.
- 86.** The Permittee shall keep a record of the operating hours for each Source IDs 1-14 and 17, and submit these records with the facility operating report required by condition 69
- 87.** The Permittee shall notify the department in each facility operating report required by condition 69 which visible-emission plan in condition 79 was used for each source. The Permittee shall also submit with the facility operating report copies of the observation results for each source that used the Method-9 Plan (condition 79.1). The Permittee shall also indicate in the facility operating report the number of calendar days that smoke was observed for each source that used the Smoke/No-Smoke Plan (condition 79.2 ).
- 88.** Report per condition 67 if:
- 88.1 a 60 minute visible emission observation results in
- a. 13 or more 15-seconds readings with an opacity greater than 20%;
  - b. a six-minute average opacity that is greater than 12% for a source with an exhaust stack diameter that is less than 21 inches; or
- 88.2 the results of a test for particulate matter exceed the particulate matter emission limit.

[18 AAC 50.350(g), (h), and (i), 1/18/97]

### **Section 13. Visible Emission Evaluation Procedures**

An observer qualified according to 40 CFR §60, RM 9 shall use the following procedures to determine the reduction of visibility through the exhaust effluent.

**Position.** The qualified observer shall stand at a distance sufficient to provide a clear view of the emissions with the sun oriented in the 140° sector to his back. Consistent with maintaining the above requirement, the observer shall, as much as possible, make his observations from a position such that his line of vision is approximately perpendicular to the plume direction and, when observing opacity of emissions from rectangular outlets (e.g., roof monitors, open baghouses, noncircular stacks), approximately perpendicular to the longer axis of the outlet. The observer's line of sight should not include more than one plume at a time when multiple stacks are involved, and in any case the observer should make his observations with his line of sight perpendicular to the longer axis of such a set of multiple stacks (e.g., stub stacks on baghouses). The observer shall maintain a distance of at 15 feet from the emission point.

**Field Records.** The observer shall record the name of the plant, emission location, facility type, observer's name and affiliation, and the date on the Visible Emissions Field Data Sheet. The time, estimated distance to the emission location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), and plume background, and source operation status are recorded on the sheet at the time opacity readings are initiated and completed.

**Observations.** Opacity observations shall be made at the point of greatest opacity in that portion of the plume where condensed water vapor is not present. The observer shall not look continuously at the plume but instead shall observe the plume momentarily at 15-second intervals. Unless directed to do otherwise in this permit, observe emissions for 60 consecutive minutes to obtain a minimum of 240 observations.

**Attached Steam Plumes.** When condensed water vapor is present within the plume as it emerges from the emission outlet, opacity observations shall be made beyond the point in the plume at which condensed water vapor is no longer visible. The observer shall record the approximate distance from the emission outlet to the point in the plume at which the observations are made.

**Detached Steam Plume.** When water vapor in the plume condenses and becomes visible at a distinct distance from the emission outlet, the opacity of emissions should be evaluated at the emission outlet prior to the condensation of water vapor and the formation of the steam plume.

**Recording Observations.** Opacity observations shall be recorded to the nearest 5 percent at 15-second intervals on the Visible Emissions Observation Record contained in this section. Record the minimum number of observations required by the permit. Each momentary observation recorded shall be deemed to represent the average opacity of emissions for a 15-second period.

**Data Reduction.** To determine compliance with a standard set out in conditions 3, 8, 22, and 41 of this permit, count the number of observations that exceed 20 percent opacity and record this number on the sheet.

To determine the six-minute average opacity set out in conditions 33 and 34 of this permit, divide the observations recorded on the record sheet into sets of 24 consecutive observations. Sets need not be consecutive in time and in no case shall two sets overlap. For each set of 24 observations, calculate the average by summing the opacity of the 24 observations and dividing this sum by 24. If an applicable standard specifies an averaging time requiring more than 24 observations, calculate the average for all observations made during the specified time period. Record the average opacity on the sheet.

## Visible Emissions Field Data Sheet

Certified Observer: \_\_\_\_\_

Company: \_\_\_\_\_

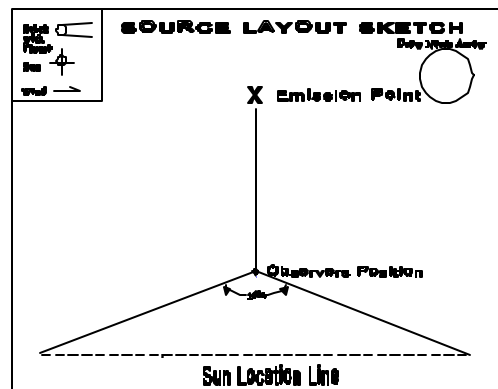
Location: \_\_\_\_\_

Test No.: \_\_\_\_\_ Date: \_\_\_\_\_

Source: \_\_\_\_\_

Production Rate, Operating Rate &  
Unit Operating Hours: \_\_\_\_\_

Hrs. of observation: \_\_\_\_\_



Clock Time	Initial				Final
Observer location Distance to discharge					
Direction from discharge					
Height of observer point					
Background description					
Weather conditions Wind Direction					
Wind speed					
Ambient Temperature					
Relative humidity					
Sky conditions: (clear, overcast, % clouds, etc.)					
Plume description: Color					
Distance visible					
Water droplet plume? (attached or detached?)					
Other information					

## Visible Emissions Observation Record

Page \_\_\_\_ of \_\_\_\_

Company \_\_\_\_\_ Certified Observer \_\_\_\_\_

Test Number \_\_\_\_\_ Clock time \_\_\_\_\_

[illegible]

Additional information:

Observer Signature \_\_\_\_\_

### Data Reduction:

Duration of Observation Period (minutes) \_\_\_\_\_

Number of Observations \_\_\_\_\_

Number of Observations exceeding 20% \_\_\_\_\_

### Average Opacity Summary

Set Number	Time Start—End	Opacity	
		Sum	Average

### Section 14. Material Balance Calculation

If the sulfur content of a fuel shipment is greater than 0.5% by weight, calculate the three-hour exhaust concentration of SO<sub>2</sub> using the following equations:

$$A = 31,200 \times [\text{wt}\%S_{\text{fuel}}] = 31,200 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$B = 0.148 \times [\text{wt}\%S_{\text{fuel}}] = 0.148 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$C = 0.396 \times [\text{wt}\%C_{\text{fuel}}] = 0.396 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$D = 0.933 \times [\text{wt}\%H_{\text{fuel}}] = 0.933 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$E = B + C + D = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$F = 21 - [\text{vol}\%_{\text{dry}}O_{2,\text{exhaust}}] = 21 - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$G = [\text{vol}\%_{\text{dry}}O_{2,\text{exhaust}}] \div F = \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$H = 1 + G = 1 + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$I = E \times H = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\text{SO}_2 \text{ concentration} = A \div I = \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ PPM}$$

The **wt%*S*<sub>fuel</sub>**, **wt%*C*<sub>fuel</sub>**, and **wt%*H*<sub>fuel</sub>** are equal to the weight percents of sulfur, carbon, and hydrogen in the fuel. These percentages should total 100%.

The fuel weight percent (wt%) of sulfur is obtained pursuant to condition 5.2. The fuel weight percents of carbon and hydrogen are obtained from the fuel refiner.

The volume percent of oxygen in the exhaust (**vol%*dry**O*<sub>2,exhaust</sub>**) is obtained from oxygen meters, manufacturer's data, or from the most recent ORSAT analysis at the same engine load used in the calculation.

Enter all of the data in percentages without dividing the percentages by 100. For example, if **wt%*S*<sub>fuel</sub>** = 1.0%, then enter 1.0 into the equations not 0.01 and if **vol%*dry**O*<sub>2,exhaust</sub>** = 3.00%, then enter 3.00, not 0.03.

**Section 15. ADEC Notification Form**

Fax this form to: (907) 269-7508 Telephone: (907) 269-8888

**Fairbanks Gold Mining, Inc**  
 Company Name

**Fort Knox Mine**  
 Facility Name
**1. Reason for notification:**☐ **Excess Emission**☐ **Permit Condition Exceedence****2. Event Information (Use 24-hour clock):**

	START Time: (hr:min):	END Time:	Duration
Date: _____	_____:	_____:	_____:
Date: _____	_____:	_____:	_____:
		<b>Total:</b>	_____:

**3. Cause of Event (Check all that apply):**☐ START UP☐ UPSET CONDITION☐ CONTROL EQUIPMENT☐ SHUT DOWN☐ SCHEDULED MAINTENANCE☐ OTHER \_\_\_\_\_*Attach a detailed description of what happened, including the parameters or operating conditions exceeded.***4. Sources Involved:**

*Identify each Emission Source involved in the event, using the same identification number and name as in the Permit. List any Control Device or Monitoring System affected by the event. Attach additional sheets as necessary.*

Source ID No.	Source Name	Description	Control Device
_____	_____	_____	_____
_____	_____	_____	_____

**5. Emission Limit and/or Permit Condition Exceeded:**

*Identify each Emission Standard and Permit Condition exceeded during the event. Attach a list of ALL known or suspected injuries or health impacts. Attach additional sheets as necessary.*

Permit Condition	Limit	Exceedence
_____	_____	_____
_____	_____	_____

**6. Emission Reduction:**

*Attach a detailed description of ALL of the measures taken to minimize and/or control emissions during the event.*

**7. Corrective Actions:**

*Attach a detailed description of ALL corrective actions taken to restore the system to normal operation.*

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

Printed Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Alaska Department of Environmental Conservation**

**Air Permits Program**

**October 19, 2000**

**Administrative Revision November 29, 2002**

**Fort Knox Mine**

**LEGAL AND FACTUAL BASIS**

**of the terms and conditions for**

**Permit No. 53TVP01**

**Prepared by H. J. Coutts**

## INTRODUCTION

This document sets forth the legal and factual basis for the terms and conditions of Operating Permit No. 53TVP01.

The Fort Knox Mine is an open pit gold mining facility that produces gold bullion from the Fort Knox gold ore body. The facility removes 36,000 to 50,000 tons of rock per day from the open pit, crushes, grinds, mills, and refines it to produce about 960 ounces of gold per day. The facility is owned and operated by Fairbanks Gold Mining, Inc. Fairbanks Gold Mining, Inc is the Permittee for the facility's operating permit.

## PROCESS DESCRIPTION

As provided in the application, the regulated emission units at the facility include four diesel electric generators, eight fuel oil-burning boilers, two waste oil-burning boilers, twelve heaters, three diesel fuel storage tanks, and a solid waste incinerator. These emission units provide power, heat, process steam, and waste reduction services to the facility operations. The regulated emission units employed in the open pit mining, crushing, grinding, and material handling include two rock crushers, a reclaim tunnel (where the material is conveyed from the primary crusher to a pile for storage prior to introduction into the cone crusher or milling process), a lime silo, an induction furnace, and a carbon regeneration kiln. The material from the induction furnace is the final gold bullion product produced by the facility. The carbon regeneration kiln allows for recycling of the carbon after it has been employed in the gold production process. All emission units at the facility were installed after October 1996. Additionally, one fuel oil-burning boiler (source ID 8) and one waste oil boiler (source ID 10) were installed in October 1997. The cone crusher (source ID 31) was installed in July 1998. Commercial operations at the mill began during the first quarter of 1997.

The sources at the facility regulated in Operating Permit 53TVP01 are identified in Table 1 in 0 of the permit

## SOURCE INVENTORY AND DESCRIPTION

Condition 0 of Operating Permit No. 53TVP01 contains Table 1 describing the sources regulated by the permit. The table is provided for information and identification purposes only. Specifically, the source rating/size provided in the table is not intended to create an enforceable limit.

## EMISSIONS

**Table 2. Emissions Summary**

Pollutant	NO <sub>x</sub>	CO	PM	SO <sub>2</sub>	VOC	HAP
Potential Emissions (TPY) per AS 46.14.990(21)	134.9	27.5	25.2	60.9	4.2	<1
Assessable Potential to Emit (TPY) per Condition 1.1	134.9	27.5	25.2	60.9	0	0

The Emissions Summary, Table 2, shows that the facility must pay fees for a minimum of 248.5 tons per year. The PM emissions includes fugitive emissions. Emission factors used for the table are from AP-42, the facility application, and based on permit-enforceable limits.

Potential emissions are based on either 8,760 hours per year operation or permit-enforceable operational limitations.

### BASIS FOR REQUIRING AN OPERATING PERMIT

Fort Knox Mine requires an operating permit because it has the potential to emit 100 tons per year (tpy) or more of a regulated air contaminant and because it has emission units regulated by 40 CFR 60 Subpart Dc, Kb, and LL. Fort Knox Mine meets the definition of operating permit facility in the state regulations at Section 2. Fort Knox Mine is also avoiding classification as a Prevention of Significant Deterioration (PSD) Major Facility as defined in 18 AAC 50.300(c)(1) through this permit by accepting enforceable limitations that keep the emissions below the trigger threshold of 250 tpy of nitrogen oxides in an area classified as attainment or unclassifiable.

Alaska regulations require operating permit applications to include identification of “regulated sources.” As applied to Fort Knox Mine, the state regulations require a description of:

Each incinerator, including a demonstration showing each requirement in 18 AAC 50.050, Incinerator Emissions Standards, that applies [18 AAC 50.335(e)(4)(A)];

Each source regulated by a standard in 18 AAC 50.055, Industrial Processes and Fuel Burning Equipment [18 AAC 50.335(e)(4)(C)];

Each source subject to a standard adopted by reference in 18 AAC 50.040 [18 AAC 50.335(e)(2)]; and

Sources subject to requirements in an existing DEC permit [18 AAC 50.335(e)(5)]

The emission sources at Fort Knox Mine classified as “regulated sources” according to the above DEC regulations are listed in Table 1 of Permit No. 53TVP01.

The facility has allowable emissions of 135 TPY NO<sub>x</sub>, 28 TPY CO, 25 TPY PM, 61 TPY SO<sub>2</sub>, and 4 TPY VOC. Any planned emissions above these allowable levels will trigger the need for a construction permit review per 18 AAC 50.300(h)(2). Per 18 AAC 50.300(c)(1) the NO<sub>x</sub> potential emission would have to increase by 115 TPY before a PSD review would be triggered.

## **CURRENT AIR QUALITY PERMITS**

### **Previous Air Quality Permit to Operate**

The only permit previously issued for this facility is permit-to-operate number y Control Permit to Operate

No. 9531-AA007. This permit-to-operate was issued before January 18, 1997; specifically, it was issued on November 13, 1995. All facility-specific requirements established in this previous permit are included in the new operating permit as described below.

### **Permit Application History**

The owner or operator submitted an application on September 29, 1997.

The owner or operator amended this application on November 19 and December 2, 1997.

The application was determined to be complete on December 10, 1997.

Additional information related to the permit application was submitted June 3, 1998.

## **COMPLIANCE HISTORY**

The facility has operated at its current location since early 1997. Review of the permit files for this facility, which includes the past inspection reports indicate a facility generally operating in compliance with the emission limits contained in its operating permit. An inspection conducted on January 30, 1997 revealed that the facility did not have the fuel meters installed on several sources as required by condition 19 of operating permit no. 9531-AA007. This problem was corrected by a permit amendment date July 25, 1997. Recently, the Department has become aware that Fort Knox has not complied with a portion of condition 28 since fugitive emission determinations were not be supplied with facility operating reports. Fort Knox has been made aware of this requirement will comply in the future.

### FACILITY-SPECIFIC REQUIREMENTS CARRIED FORWARD

18 AAC 50.350(d)(1)(D) requires that this permit include each facility specific requirement established in prior permit y Control Permit to Operate

No. 9531-AA007. Table 3 below lists the old requirement (condition) and the new condition that carries over the old requirement into the new permit.

Table 3. A comparison of pre-January 18, 1997 Permit No. y Control Permit to Operate

**No. 9531-AA007 conditions to Permit No. 53TVP01 conditions.**

<b>Permit No. y Control Permit to Operate No. 9531- AA007 condition</b>	<b>Description of Requirement</b>	<b>Permit No. 53TVP01 condition</b>	<b>How condition was revised</b>
Introductory paragraph and Exhibit A	Authority for permit and source list	Section 2 and Table 1	same information, different format
1	comply with ambient air quality standards	48	now required only for construction permits.
2 and Exhibit B	comply with most stringent emission standards, limits, & specifications	Section 5	emission limits that DEC has authority to impose are unchanged and now listed as separate permit conditions
3	construction notification requirement	not included	requirement no longer applicable
4	operation and maintenance procedures	Condition 14	slightly reworded
5	baghouse operation and maintenance procedures	22, 24, and 32	requirements made explicit
6	diesel generator operation limit	6	unchanged

<b>Permit No. y Control Permit to Operate No. 9531- AA007 condition</b>	<b>Description of Requirement</b>	<b>Permit No. 53TVP01 condition</b>	<b>How condition was revised</b>
7	prohibition from burning hazardous waste and requirement to handle used oil per 40 CFR 279	21 and 38	unchanged
8	prohibition from burning certain types of waste in incinerator	21	unchanged except that the "two burn cycles per day" limit was dropped; this limit was unnecessary in restricting PTE
9	0.5% sulfur limit for fuel oil-burning sources and 1.0% sulfur limit for waste oil boilers	5.1, 10.1, 10.2 and 19.1	unchanged except the waste oil boilers sulfur limit reduced to an amount determined by material balance that ensures compliance with 500 PPM standard
10-14	source test requirements	not included	requirements no longer applicable
15	ice fog requirement	39	unchanged
16-18	fugitive dust control provisions	49	made more explicit
19	fuel consumption monitoring	31	made more explicit
20	fuel sulfur monitoring	5.2, 10.2, and 19.1	made more explicit
21	monthly opacity monitoring	3, 8, 17, 20, 22, 24, 26, 33, 34, and 35	reading duration changed
22	baghouse pressure drop monitoring	22.2 and 32.2	more frequent monitoring
23	off-site fugitive emissions determination requirement	not included	requirement no longer applicable
24-25	excess emission reporting requirements	67	modified to be consistent with applicable regulation
26	access requirement for department	78	unchanged

<b>Permit No. y</b> Control Permit to Operate No. 9531- AA007 <b>condition</b>	<b>Description of Requirement</b>	<b>Permit No. 53TVP01 condition</b>	<b>How condition was revised</b>
	personnel		
27	access restriction signs for public	37	unchanged
28	operating report requirement	69	only modified to extent necessary for other changes in permit language
29	recordkeeping requirement	66	made more explicit
30	permit posting requirement	not included	not a facility-specific requirement

## LEGAL AND FACTUAL BASIS FOR THE PERMIT CONDITIONS

### Conditions 1 - 2

**Legal Basis:** [18 AAC 50.400 – 420]

[18 AAC 50.350(c), 1/18/97]

The regulations require all permits to include due dates for the payment of fees and any method the Permittee may use to re-compute assessable emissions.

**Factual Basis:** These conditions require the Permittee to pay fees in accordance with the department's billing regulations. The department's billing regulations set the due dates for payment of fees based on the billing date.

The conditions also set forth how a Permittee may re-compute assessable emissions. If Permittee does not wish to annually calculate assessable emissions, emissions fees may be paid based on “potential to emit.”

The potential to emit for sulfur dioxide is based upon a 0.5% fuel sulfur content for the fuel oil-burning sources and 0.75% for the waste oil-burning sources as allowed in the permit.

### Condition 3

**Legal Basis:** [18 AAC 50.055(a)(1), 1/18/97]

[18 AAC 50.350(d)], 6/21/98]

Diesel engines are fuel-burning equipment. This regulation applies to operation of all fuel-burning equipment in Alaska.

**Factual Basis:** The condition cites the state visible emission standard applicable to fuel-burning equipment. The Permittee shall not cause or allow the diesel engines to violate this standard.

The monitoring, recordkeeping, and reporting requirements are listed in Section 12 of the permit. The requirements for the visible emission and particulate matter standards are combined in this section.

There are two options for monitoring visible emissions. One option requires the Permittee to observe visible emissions in accordance with the state reference test method. The other option requires the Permittee to momentarily observe the exhaust for presence or absence of visible emissions. This latter option takes into account the difficulty and expense of getting certified readers to remote locations in Alaska.

Under the latter option, all sources are initially observed for the presence or absence of visible emissions in the exhaust for 30 operating days. Visible emissions are presumed to be absent if the exhaust exhibits less than 5 percent opacity. The department believes the initial thirty days is sufficient to capture all operating modes and to assure the monitoring determines if the engine complies with the visible emission standard. If visible emissions are absent during the 30 operating days, the monitoring frequency is relaxed to one observation for every 30 days of source operation. The department believes monthly checks are sufficient to monitor for the presence of increased visible emissions that may result from degradation of an engine.

If the Permittee observes smoke in the exhaust during the initial 30 operating days or during a monthly check, the Permittee must take action to reduce visible emissions from the source within 72 hours of the observation. After completing the action, the Permittee continues to observe the exhaust for the presence or absence of visible emissions for another 30 operating days. If smoke is observed during this 30-day period, the Permittee must observe visible emissions using the state reference test method within 14 days after the visible emissions are observed.

The recordkeeping requirements consist of keeping records of the results all visible emission observations and records of any actions taken to reduce visible emissions. The Permittee must report copies of the results of all observations done using the state reference test method with operating reports. The Permittee must report emissions in excess of the state visible emission standard.

#### Condition 4

**Legal Basis:** [18 AAC 50.055(b)(1), 1/18/97]  
[18 AAC 50.350(d)], 6/21/98]

Diesel engines are fuel-burning equipment. This regulation applies to operation of all fuel-burning equipment in the State of Alaska.

**Factual Basis:** The condition cites the state particulate matter emission standard applicable to fuel-burning equipment. The Permittee shall not cause or allow diesel engines to violate this standard.

The monitoring, recordkeeping, and reporting requirements are listed in Section 12 of the permit. The requirements for the visible emission and particulate matter standards are combined in this section.

The requirement to test for particulate matter to determine compliance with the standard is triggered by the results of observations conducted in accordance with the state reference test method. The Permittee is required to conduct tests if the results of an observation show noncompliance with visible emission standard or the average opacity indicates noncompliance with the particulate matter standard.

The department is not requiring initial tests to show compliance with the particulate matter standards. Based on manufacturers' data, the department believes that most new diesel engines comply with the particulate matter standard<sup>1</sup>. Also, there are opacity-particulate correlations<sup>2</sup> that show emissions from diesel engines commonly used in Alaska will meet the state standard of 0.05 grains per dry standard cubic foot if the average opacity in the exhaust is less than 20 percent. The department believes this is sufficient justification to not require initial compliance testing since the Permittee certified compliance with the visible emission standard in the application. However, the department is requiring testing if the Permittee observes visible emissions greater than the state standard.

In a general operating permit for diesel engines, the department required source tests for particulate matter when the average opacity of a visible emission observation exceeded twelve percent. Since that time, the department has uncovered additional test data and literature that supports a statement that diesel engines will meet the 0.05 grain loading standard when the average opacity is less than twelve percent, provided that the exhaust outlet diameter (path length for opacity observations) exceeds 21 inches. Testing conducted at both an Alaskan power plant and an Hawaiian utility confirm that compliance with the 20 percent opacity standard will insure compliance with the 0.05 gr/scf particulate standard, provided that the exhaust outlet is 21 inches or larger. This test data closely agrees with values obtained using the smoke density calculator at <http://www.dieselnet.com/calculator/index.html>. The calculator is based on the report, *Particulate Matter Measurements*, DieselNet Technology Guide, Revision 1997.12. Based on this new information, the department is requiring testing if the Permittee observes visible emissions greater than 12%, expressed as a six-minute average and the stack diameter if the source is less than 21 inches. The department is also requiring the Permittee to measure visible emissions during a source test and to calculate the average opacity during the test.

The Permittee must report copies of all source test reports and emissions in excess of the particulate matter standard.

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<sup>1</sup> See attached data

<sup>2</sup> See attached graph

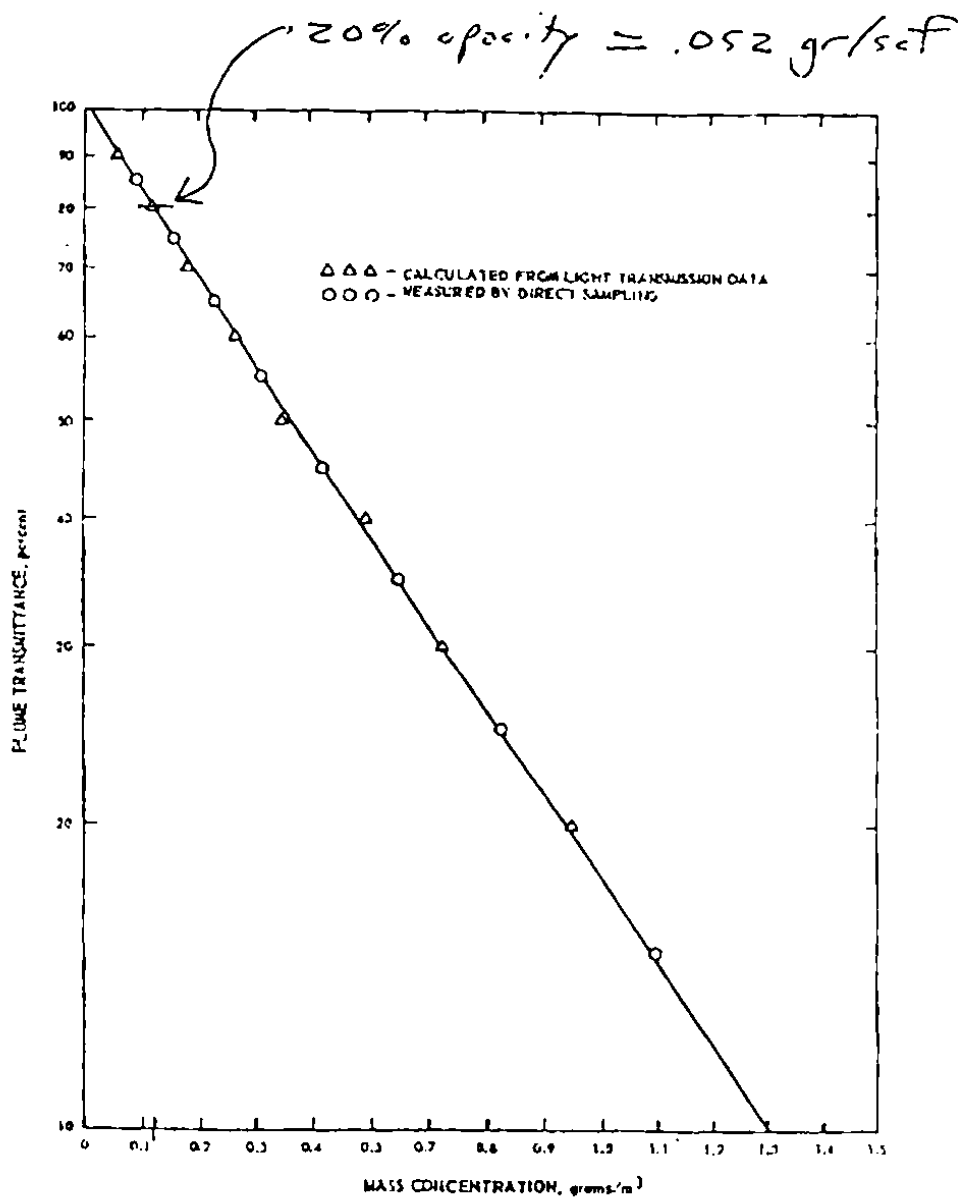


Figure 32. Mass concentration of black plume as calculated from transmittance and measured by direct sampling.

#### OPTICAL PROPERTIES AND VISUAL EFFECTS

[illegible]

However, both test data and the literature support the statement that the diesel engines will meet the 0.05 grain loading standard, provided that the exhaust outlet diameter (path length for opacity observations) exceeds 21 inches. Testing conducted at both an Alaskan power plant and an Hawaiian utility confirm that compliance with the 20 percent opacity standard will insure compliance with the 0.05 gr/scf particulate standard, provided that the exhaust outlet is 21 inches or larger. This test data closely agrees with values obtained using the smoke density calculator at <http://www.dieselnet.com/calculator/index.html>. The calculator is based on the report, *Particulate Matter Measurements*, DieselNet Technology Guide, Revision 1997.12.

### Condition 5

**Legal Basis:** [18 AAC 50.055(c), 1/18/97]

[18 AAC 50.350(d)], 6/21/98]

The condition applies to diesel engines because the engines are fuel-burning equipment.

**Factual Basis:** The condition re-iterates a sulfur emission standard applicable to fuel-burning equipment. The Permittee may not cause or allow their equipment to violate this standard.

Sulfur dioxide comes from the sulfur in the liquid, hydrocarbon fuel (e.g. diesel or No. 2 fuel oil). Attachment 1 of this document provides the proof of the stoichiometric, mass-balance equations to calculate sulfur-dioxide concentration of the exhaust gas from the combustion of fuel with ambient air. According to these equations, fuel containing no more than 0.5% sulfur by weight will always comply with the emission standard. For fuels with a sulfur content higher than 0.5%, the condition requires the Permittee to use Section 14 to calculate the sulfur-dioxide concentration using the equations to show that the standard is not exceeded.

Either fuel sulfur testing or verification of ASTM fuel grade will verify compliance.

### Condition 6

**Legal Basis:** [18 AAC 50.350(e)(3), 1/18/97]

[Air Quality Control Permit No. 9531-AA007, 11/13/95]

**Factual Basis:** Condition 7 is an operational limitation on the four diesel electric generators located at the electrical substation of the Fort Knox mine. This limitation was contained in the 1995 operating permit and was carried over into this operating permit consistent with Fort Knox's request. Without this limitation, the facility's potential to emit nitrogen oxides would exceed 250 tons per years and would, as a result, require the facility to undergo major new source review permitting pursuant to 18 AAC 50.300(c). With the limitation, these engines emit 122.3 tons of nitrogen oxides per year and the facility emits a total of 134.9 tons. The viability of this operational limitation is tied directly to condition 7.

### Condition 7

**Legal Basis:** [18 AAC 50.350(e)(3), 1/18/97]

[Air Quality Control Permit No. 9531-AA007, 11/13/95]

**Factual Basis:** The operational limitation contained in condition 6 is tied with compliance with this hourly emission limitation. All four engines are identical and Fort Knox demonstrated they could comply with the 61.15 pound per hour nitrogen oxides limit by testing one of the engines on May 30, 1997. The measured emission rate was 48.91 pounds per hour. This operating permit requires additional testing only if the engines reach their operational limitation of 1000 hours per twelve-month period since the engines operate very infrequently (Fort Knox gets their electrical power from the grid and runs the engines only for maintenance and those cases where the grid may fail). Additionally, the facility's nitrogen oxide emissions are capped at about 54% of the major source threshold of 250 tons. These facts warrant imposition of infrequent testing by the Department.

### Conditions 8 - 10

**Legal Basis:** [18 AAC 50.055(a)(1), (b)(1), and (c) 1/18/97]  
[18 AAC 50.350(d), 6/21/98]

**Factual Basis:** These conditions, applicable to only those boilers and heaters that are not insignificant under 18 AAC 50.335(q), are identical to conditions 3 through 5. The basis, as listed for those conditions apply here except that these sources are boilers, not engines. One can reasonably expect less of a particulate or opacity problem from boilers than engines.

### Conditions 11 - 12

**Legal Basis:** [18 AAC 50.040(a)(2)(E), 1/18/97]  
[18 AAC 50.350(g), 1/18/97]  
[40 CFR §60.7(a)(1)-(3), §60.11(d), §60.19(d), §60.42c(d) and (h)(1), §60.44c(h), and §60.48c(a)(1), (e)(11), (f)(1), and (g)]

**Factual Basis:** These are federal requirements applicable to the Kewanee boiler (source ID 8) since it has a rated heat input capacity greater than 10 MMBtu/hr and it was installed after the 40 CFR §60 Subpart Dc applicability date of June 9, 1989. The Kewanee boiler must also comply with conditions 8 through 10 and conditions 11 through 14 are separated to make clear the requirements apply only to the Kewanee boiler. Generally, if this boiler is operated in compliance with conditions 8 through 10 it will comply with the NSPS. However, certain notifications are required to be submitted to EPA and the source is subject to the federally enforceable requirement to be operated consistent with good air pollution control practices (condition 14). Condition 12.2 is included in this permit though there is no discernable reason for its purpose beyond that it is contained in subpart Dc. Fort Knox may elect to seek EPA's written approval to have this requirement waived. The Department is likely to support a request for this waiver.

### Conditions 13 - 16

**Legal Basis:** [18 AAC 50.040(a), 1/18/97]  
[40 CFR 60.7(b), 60.11(d & g), and 60.12, 1999]

**Factual Basis:** This is a general provision in 40 CFR §60 (the NSPS) applicable to all sources subject to a subpart of the NSPS; in this case, the subparts are Dc and LL and the affected sources are those listed in conditions 11, 12, 28, and 32 through 34.

### Conditions 17 - 18

**Legal Basis:** [18 AAC 50.030, 1/18/97]  
[18 AAC 50.055(b)(1), 1/18/97]  
[18 AAC 50.110, 1/18/97]

**Factual Basis:** Conditions 17 and 18 set out the requirements for burning used oil. These requirements were contained in several pre-January-18, 1997 permits and mirror those found in the Alaska Air Quality Control Plan. Source test information from several facilities indicates that the particulate emissions standard of 0.05 grains per dscf cannot be met without blending used oil with virgin fuel. Therefore, one of the requirements is to either blend at a rate of 50 percent or less or conduct a source test demonstrating that the particulate emission standards can be met without blending or by blending at a rate above 50 percent. These requirements are included both because of the potential for exceeding particulate emissions and because emissions of hazardous air pollutants such as metals could be injurious to human health or welfare, animal or plant life, or property.

### Condition 19

**Legal Basis:** [18 AAC 50.055(c), 1/18/97]  
[18 AAC 50.350(d), 6/21/98]

**Factual Basis:** This condition requires compliance with the state sulfur dioxide emission standard of 500 PPM and the bases for the monitoring, recordkeeping, and reporting are essentially the same as for condition 5 except the allowable fuel sulfur content is higher (0.75% instead of 0.5%). Using the equations in Section 14 of the permit, the Department has concluded that combustion of fuels with a sulfur content as high as 0.75% will not result in a violation of the 500 PPM sulfur dioxide stack standard. This condition requires the collection of monthly samples of the waste oil entering the boilers at the only line that runs from the waste oil storage tanks to the two boilers; this will result in a representative sample of the oil. So long as the waste oil sulfur content stays below 0.75%, any amount of diesel no. 1 or 2 can be burned with the waste oil and no exceedance of the 500 PPM state sulfur dioxide standard will occur. In the event the waste oil sulfur content is higher than 0.6%, as determined by the monthly sampling, this condition requires the Permittee to draw weekly samples of the waste oil in order to better ensure an exceedance of the 0.75% limit does not occur.

### Condition 20

**Legal Basis:** [18 AAC 50.050(a)(2), 1/18/97]  
[18 AAC 50.350(d), 6/21/98]

**Factual Basis:** The solid waste incinerator (source ID 27) is required to comply with the state's opacity standard for incinerators but is too small to have to comply with the state's particulate emission standard for incinerators. As such, this condition requires only monthly monitoring of the opacity from the incinerator to ensure it complies with the standard.

### Condition 21

**Legal Basis:** [18 AAC 50.350(d)(1)(D), 6/21/98]

[Air Quality Control Permit No. 9531-AA007, 11/13/95]

**Factual Basis:** As with condition 38, this requirement is a carry-over from the 1995 operating permit. No monitoring, recordkeeping, or reporting is proposed for this prohibition.

### Condition 22 - 23

**Legal Basis:** [18 AAC 50.055(a)(1) and (b)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

**Factual Basis:** The emissions from the induction furnace, source ID 28, are controlled by a fabric filter system (baghouse) that exhausts inside a building. The emissions from this source are considered a product by Fairbanks Gold Mining and are greatly controlled as a result. In any case, proper operation of a baghouse with bags capable of exhausting no more than 0.01 grains of particulate matter per cubic foot of exhaust gas should easily ensure compliance with the standards in conditions 22 and 23. Thus, these conditions are geared toward that end. The conditions also require that corrective action be initiated whenever the baghouse pressure differential is outside manufacturer's specifications or very different from that observed during a May 1997 source test. Corrective actions must also be initiated if visible emissions are observed from the baghouse exhaust as this would be indicative of a compromised filtering system.

### Conditions 24 - 25

**Legal Basis:** [18 AAC 50.055(a)(1) and (b)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

**Factual Basis:** Like the induction furnace covered by conditions 22 and 23, the emissions from the lime silo (source ID 33) are controlled by a fabric filter system capable of exhausting no more than 0.01 grains of particulate matter per cubic foot of exhaust gas. No visible emissions would be expected from such a filter system and compliance with the particulate standard should be easily achievable. Thus, these conditions are also geared toward proper operation and maintenance of the fabric filter system. Since the pressure differential across the fabric filter on the bin vent is not monitored, this condition also requires monthly evaluation of the visible emissions from this source. Corrective actions must be initiated if any visible emissions are observed.

### Conditions 26 - 27

**Legal Basis:** [18 AAC 50.055(a)(1) and (b)(1), 1/18/97]

[18 AAC 50.350(d), 6/21/98]

**Factual Basis:** The carbon regeneration kiln, source ID 29, is an uncontrolled source of particulate emissions with a rated capacity of 15 tons per day. It is a rotating kiln that heats the carbon up to around 600°F in the regeneration process. The application lists the particulate emission rate from this source at 0.54 pounds per hour but no testing is available to the Department verifying this. As such, these conditions require monthly opacity monitoring and a particulate matter source test within twelve months of the date of permit issuance. During the testing, the Permittee is required to read the opacity concurrently with the particulate sampling and, thereafter, use the opacity as a surrogate for demonstrating compliance with the particulate standard on an ongoing basis. If the observed opacity during a monthly reading exceeds the level specified in condition 27.2, the Permittee is required to re-conduct particulate matter testing to establish a new opacity/particulate matter correlation and to ensure the source is in compliance with the particulate standard.

### Conditions 28 - 29

**Legal Basis:** [18 AAC 50.040(a)(2)(M), 1/18/97]

[18 AAC 50.350(i), 1/18/97]

[Federal Citation: 40 CFR §60.116b(a) & (b), 7/1/97]

**Factual Basis:** Conditions 28 and 29 are from a federal requirement for storage tanks, which were adopted by reference in 18 AAC 50. Fuels with a maximum vapor pressure less than 15.0 kPa stored in Source IDs 34-36 are subject to the paragraph 116b(a) and (b) size and volume recordkeeping provisions of 40 CFR §60, Subpart Kb.

### Condition 30

**Legal Basis:** [Permit to Control Permit to Operate  
No. 9531-AA007, 11/13/95]

[18 AAC 50.350(e)(3), 6/21/98]

**Factual Basis:** Condition 30 re-iterates a NO<sub>x</sub> emission limit from the old permit to avoid the requirement for a PSD permit review. The limit is applicable to all the facility's fuel-burning sources. Only the operating hours of the engines and the annual fuel consumption rate of the fuel oil burning boilers and heaters are limited to ensure compliance with this limit. If the potential nitrogen oxide emissions from all other sources, operating at their rated capacity for 8,760 hours per year, are added to the restricted emissions from the engines and the fuel oil-burning boilers and heaters, the facility-wide nitrogen oxide emissions will be 134.9 tons. Thus, compliance with conditions 6, 7, and 31 are sufficient to ensure compliance with this condition.

To determine the facility's potential to emit nitrogen oxides with the enforceable restrictions, the following emission factors were used:

- 61.15 pounds per hour for the diesel generators; this is the permit emission limit for the engines,

- 20 pounds per 1000 gallons of fuel oil consumed for the fuel oil-burning heaters and boilers and for fuel consumption in the incinerator (AP-42, Table 1.3-1),
- 19 pounds per 1000 gallons of waste oil consumed by the waste oil boilers (AP-42, Table 1.11-2), and
- 3.56 pounds per ton of waste burned in the solid waste incinerator (AP-42, Table 2.1-4).

By limiting the nitrogen oxide emissions from the facility's emission units and by ensuring the facility complies with the restrictions concerning fuel sulfur content, the Fort Knox Gold Mine will avoid classification as major facility under 18 AAC 50.300(c).

### Condition 31

**Legal Basis:** [Air Quality Control Permit No. 9531-AA007, 11/13/95]  
[18 AAC 50.350(e)(3), 1/18/97]

**Factual Basis:** This condition limits the volume of fuel oil that may be burned in any facility boiler or heater, whether significant per 18 AAC 50.335(q) or not. The relevant information behind this condition is that all the facility boilers and heaters (except the waste oil boilers) and the solid waste incinerator receive their fuel from only four tanks, those listed in condition 31.1. By tracking the throughput in those four tanks, facility can accurately track their compliance status with the fuel use limit.

This limit, imposed at the request of Fort Knox, keeps the facility-wide potential nitrogen oxide emissions comfortably below the 250-ton major source threshold. This allows latitude in handling any necessary emission limitation adjustments with other sources. The fact is, even without this restriction, the facility-wide potential to emit nitrogen oxides is around 160 tons.

This limit is also 44,896 gallons higher than the limit imposed by permit 9531-AA007. The limit was increased to allow for the installation of additional fuel burning equipment. No additional permitting requirements are triggered by this increase in allowable fuel consumption. The following additional limits were requested in the application:

- a limit of 36,000 gallons of waste oil for each waste oil boiler (source ID 13 and 14);
- a limit of 2,920 hours of operation and 292 tons of waste charge per year in the solid waste incinerator (source ID 27);
- a limit of 15 tons per day and 5,475 tons per year of carbon charge to the regeneration kiln (source ID 29).

These limits are not imposed in this permit. The first two, related to the waste oil boilers and the solid waste incinerator were dropped at the verbal request of the Permittee. The limits are unnecessary as they do not significantly affect the facility-wide potential to emit any criteria pollutants (the emission units are very small) and the monitoring, recordkeeping, and reporting would be very burdensome for the inconsequential benefit derived. The third limit for the carbon regeneration kiln was not imposed since 15 tons per day and 5,475 tons per year is the rated capacity of the unit as listed in the operating permit application. As such, the limit has no meaning.

**Conditions 32 - 33**

**Legal Basis:** [18 AAC 50.040(a)(2)(X), 1/18/97]  
[18 AAC 50.350(d), 6/21/98]  
[40 CFR §60.382(a)(1) and (2), 1999]

**Factual Basis:** These two conditions are the 40 CFR 60 Subpart LL emissions standards applicable to the facility's stack emissions resulting from material handling and crushing. Similar to the permit conditions for the induction furnace and lime silo, these conditions are geared toward proper operation and maintenance of the fabric filter systems serving the crushers and the reclaim tunnel (material handling); there are no stacks in these processes not equipped with a fabric filter system. There are a total of five fabric filter systems serving the crushers and the reclaim tunnel. They are listed in condition 32.2. Compliance with these conditions will ensure compliance with the stack emission standards in 40 CFR 60 Subpart LL.

**Condition 34**

**Legal Basis:** [18 AAC 50.040(a)(2)(X), 1/18/97]  
[40 CFR §60.382(b), 1999]

**Factual Basis:** This condition contains the 40 CFR 60 Subpart LL requirement to limit fugitive emissions from material handling (i.e., those emissions from the elevators, aprons, transfer points, discharge from the lime silo onto the conveyor, storage bins and areas, and loading stations) to 10% or less as a six minute average. To show that this condition is complied with, the Permittee must read and record the opacity monthly. Four locations are listed in the permit where the opacity readings must be made and these represent what are likely the most probable sources of fugitive emissions from the sources regulated by this condition.

**Conditions 35 - 36**

**Legal Basis:** [18 AAC 50.055(a)(1) and (b)(1), 1/18/97]  
[18 AAC 50.350(d), 6/21/98]

**Factual Basis:** These are the state opacity and particulate matter limitations applicable to the primary and cone crushers regulated by conditions 32 and 33. Compliance with conditions 32 and 33 will ensure compliance with these conditions.

**Conditions 37 - 39**

**Legal Basis:** [18 AAC 50.350(d)(1)(D), 6/21/98]  
[Air Quality Control Permit No. 9531-AA007, 11/13/95]

**Factual Basis:** These conditions are carry-overs from the air quality control permit no. 9531-AA007. Condition 37 is designed to restrict public access to the facility, condition 38 is a general prohibition from burning any hazardous waste at the facility, and condition 39 requires the Permittee to reduce their water emissions should ice fog be a

problem in the area. Condition 38 has no monitoring, recordkeeping, or reporting since it is a general prohibition. Condition 39 has no monitoring, recordkeeping, or reporting since the requirement to reduce water emissions would exist only upon Department request.

#### **Condition 40**

**Legal Basis:** [40 CFR §68.215]  
[40 CFR §68.190]

**Factual Basis:** The operating permit must contain a statement listing 40 CFR §68 (Risk Management Plan submittal) as an applicable requirement per 40 CFR §68.215. Fort Knox submitted a Risk Management Plan to EPA postmarked June 18, 1999 and ruled complete on July 7, 1999. The plan was submitted for a program level one process (40 CFR §68.10) and the covered chemical is hydrochloric acid. Additional details related to this Risk Management Plan submittal are available at <http://www.epa.gov/ceppo/fileio/srmp7789.rmp>.

#### **Conditions 41 - 43**

**Legal Basis:** [18 AAC 50.055(a)(1), 1/18/97]  
[18 AAC 50.055(b)(1), 1/18/97]  
[18 AAC 50.055(c), 1/18/97]  
[18 AAC 50.050(a)(2), 1/18/97]  
[18 AAC 50.350(m)(3), 9/4/98]

**Factual Basis:** These are general emission standards which apply to all industrial processes fuel-burning equipment, and incinerators regardless of size. The conditions reiterate the general standards and require compliance for insignificant sources. The Permittee may not cause or allow their equipment to violate these standards. Insignificant sources are not listed in the permit unless specific monitoring, recordkeeping, and reporting are necessary to ensure compliance.

The department has found that the boilers and heaters that can be characterized as insignificant sources at this facility (source IDs 15, 16, and 18-26) need monitoring, recordkeeping, and reporting to ensure compliance. Specifically, the combustion of fuels in these sources must be tracked to ensure the facility complies with the fuel use limit in condition 31.

#### **Condition 44**

**Legal Basis:** [18 AAC 50.350(m)(3), 9/4/98]

**Factual Basis:** The regulations require a Permittee to certify that their insignificant sources comply with applicable requirements. The condition restates the regulatory requirement.

#### **Condition 45**

**Legal Basis:** [18 AAC 50.040(b)(3) & 18 AAC 50.350(d)(1), 1/18/97]

[Federal Citation: 40 CFR §61, Subpart M, 12/19/96]

If the Permittee engages in asbestos demolition and renovation, then these requirements may apply.

**Factual Basis:** The condition cites and requires compliance with the regulations that will apply if the Permittee engages in asbestos demolition or renovation. Because these regulation include adequate monitoring and reporting requirements and because the Permittee is not currently engaged in such activity, simply citing the regulatory requirements is sufficient.

#### Condition 46

**Legal Basis:** [18 AAC 50.040(d) & 18 AAC 50.350(d)(1), 1/18/97]

[Federal Citation: 40 CFR §82, Subpart F, 7/1/97]

**Factual Basis:** The condition cites and requires compliance with the regulations that will apply if the Permittee uses certain refrigerants. Because these regulation include adequate monitoring and reporting requirements and because the Permittee is not currently engaged in such activity, simply citing the regulatory requirements is sufficient

#### Condition 47

**Legal Basis:** [18 AAC 50.045(a) & 18 AAC 50.350(f)(3), 1/18/97]

Applies to the Permittee because the Permittee must comply with emission standards in 18 AAC 50.

**Factual Basis:** The requirement prohibits diluting emissions as a means of compliance. In practical terms, dilution only affects compliance when the emissions are being measured. Therefore, the monitoring is limited to immediately before source testing and once a year for exhaust that is continuously monitored.

Dilution can occur by design or by leaks in the exhaust ductwork. Intentional dilution is not expected to be a problem, as it would increase operating costs by increasing induced draft fan power requirements. Careful review of source test plans and operating conditions will prevent intentional dilution. Therefore, only leaks need to be monitored under this condition.

The monitoring adequately prevents dilution by requiring leaks to be repaired before compliance with the emission standards is measured.

#### Condition 48

**Legal Basis:** [18 AAC 50.045(c) & 18 AAC 50.350(f)(3), 1/18/97]

Applies to the Permittee because they will operate a source in Alaska.

**Factual Basis:** This requirement prohibits violation of the air quality standards. Alaska's air quality control plan uses construction permit to ensure that new or increased pollution will not violate these standards. Therefore, as long as the Permittee obtains and complies with the required construction permits, the new or increased pollution will not violate the standards.

Monitoring simply requires the Permittee to obtain and comply with all required permits.

**Condition 49**

**Legal Basis:** [18 AAC 50.040(e), 18 AAC 50.045(d), & 18 AAC 50.350(d)(1), 1/18/97]

Applies to the Permittee because the Permittee will engage in industrial activity at the facility.

**Factual Basis:** The condition restates the regulatory prohibition on fugitive dust. This prohibition calls for reasonable precautions to be taken to prevent particulate matter from being emitted into the ambient air while engaged in industrial activities.

The Permittee must keep records describing all precautions taken to prevent particulate matter from becoming airborne due to any of the activities described in this condition. If the precautions are not listed in the State Air Quality Control Plan, then the Permittee must also record a statement describing why the Permittee believes the precaution is reasonable. This monitoring ensures that the Permittee takes the reasonable precautions and has a reason for deciding if the precaution is reasonable.

The Permittee must perform visual surveys at least once each month, and take corrective action if particulate matter is observed leaving the property. This is intended to identify whether the reasonable precautions taken are working, and to correct the problem if the precautions are not working.

**Condition 50**

**Legal Basis:** [18 AAC 50.055(g) and 18 AAC 50.310(m), 1/18/97]

Applies to the facility because the facility contains a stack or source modified after November 1, 1982.

**Factual Basis:** The condition restates the prohibition on stack injection (i.e., disposing of material by injecting it into a stack). No specific monitoring for this condition is practical. Compliance is ensured by inspections, because the source or stack would need to be modified to accommodate stack injection.

**Condition 51**

**Legal Basis:** [18 AAC 50.040(e), 18 AAC 50.065(b), & 18 AAC 50.350(d)(1), 1/18/97]

These conditions apply if the Permittee conducts open burning at the facility.

**Factual Basis:** The condition requires the Permittee to comply with the regulatory requirements when conducting open burning at the facility.

Not specific monitoring is required for this condition. The permit does require the Permittee to keep "sufficient records" to demonstrate compliance with the standards for conducting open burning, but does not specify what these records should contain.

More extensive monitoring and recordkeeping is not warranted because the Permittee does not conduct open burning as a routine part of their business. Also, most of the requirements are prohibitions, which are not easily monitored. Additional monitoring is achieved through

condition 52, which requires a record of complaints. Therefore, the department does not believe that additional monitoring is warranted.

### Condition 52

**Legal Basis:** [18 AAC 50.110, 5/26/72]  
[18 AAC 50.040(e), & 18 AAC 50.350(d)(1), 1/18/97]

Applies to the facility because the facility will have emissions.

**Factual Basis:** The condition restates the general prohibition on injurious air emissions, which applies to any emissions from the facility. While the other permit conditions and emissions limitation should ensure compliance with this condition, unforeseen emission impacts can violate this standard. These violations would go undetected except for complaints from affected persons. Therefore, to monitor compliance, the Permittee must monitor and respond to complaints.

The Permittee is to report any complaints and injurious emissions. The plant does not handle any large quantities of hazardous air pollutants. The Permittee must keep records of the date, time, and nature of all complaints received and summary of the investigation and corrective actions undertaken for these complaints and to submit copies of these records upon request of the department.

### Condition 53

**Legal Basis:** [18 AAC 50.235(a) & 18 AAC 50.350(f), 1/18/97]

Applies to the facility because the facility contains equipment subject to a technology-based emission standard.

**Factual Basis:** This condition restates a regulation that requires the Permittee to take reasonable steps to minimize emissions if certain activity causes exceedance of a technology-based emission standard. Because the technology-based emission standard itself is a condition of the permit, the Permittee will report the excess emissions under condition 67. Because the excess emission report requires information on the steps taken to minimize emissions, this report is adequate monitoring for compliance with this condition.

### Condition 54

**Legal Basis:** [18 AAC 50.335(a), 1/18/97]

Applies if the Permittee intends to renew the permit.

**Factual Basis:** The condition restates the regulatory deadlines, citing the specific dates applicable to the facility. Submittal of the renewal application is sufficient monitoring, recordkeeping and reporting.

### Condition 55

**Legal Basis:** [18 AAC 50.345(a)(10), 1/18/97]

[18 AAC 50.220a), 1/18/97]

Standard condition to be included in all permits.

**Factual Basis:** Condition requires the Permittee to conduct source tests as requested by the department, therefore no monitoring is needed. Conducting the requested source test is its own monitoring.

### Conditions 56 - 58

**Legal Basis:** [18 AAC 50.220(b) & (c), 1/18/97]

[18 AAC 50.350(g), 1/18/97]

Applies when the Permittee is required to conduct a source test.

**Factual Basis:** These conditions restate regulatory requirements for source testing. As such, they supplement the specific monitoring requirements stated elsewhere in this permit. The tests reports required by later conditions adequately monitor compliance with these conditions, therefore no specific monitoring, reporting, or recordkeeping is needed.

### Conditions 59 - 62

**Legal Basis:** [18 AAC 50.345(a)(10), 1/18/97]

[18 AAC 50.350(b)(3), 1/18/97]

[18 AAC 50.350(g), 1/18/97]

Applies when the Permittee is required to conduct a source test.

**Factual Basis:** Standard condition 18 AAC 50.345(a)(10) is incorporated through these three conditions. Because this standard condition supplements specific monitoring requirements stated elsewhere in this permit, no monitoring, reporting, or recordkeeping is required. The source test itself is adequate to monitor compliance with this condition.

### Condition 63

**Legal Basis:** [18 AAC 50.205, 1/18/97]

[18 AAC 50.345(a)(9), 1/18/97]

[18 AAC 50.350(b)(3) & 18 AAC 50.350(i) 1/18/97]

Applies because the permit requires the Permittee to submit reports, and because the condition is a standard condition.

**Factual Basis:** This condition restates the regulatory requirement that all reports must be certified. To ease the certification burden, the condition allows the excess emission reports to be certified with the semi-annual operating report, although the excess emission reports must be submitted more frequently. This condition supplements the reporting requirements of the permit and no monitoring, recordkeeping or reporting for this condition is needed.

**Condition 64**

**Legal Basis:** [18 AAC 50.350(i), 1/18/97]

Applies because the Permittee is required to send reports to the department.

**Factual Basis:** This condition merely specifies where submittals to the department should be sent. Receipt of the submittal at the correct department office is sufficient monitoring for this condition. This condition supplements the reporting requirements of the permit and no monitoring, recordkeeping, or reporting for this condition is needed.

**Condition 65**

**Legal Basis:** [18 AAC 50.200, 1/18/97]

[18 AAC 50.345(a)(8), 1/18/97]

[18 AAC 50.350(b)(3) & 18 AAC 50.350(g – i), 1/18/97]

Applies to all Permittee s, and incorporates a standard condition

**Factual Basis:** Incorporates a standard condition in regulation, which tells the Permittee to submit information requested by the department. Receipt of the requested information is adequate monitoring.

**Condition 66**

**Legal Basis:** [18 AAC 50.350(h), 1/18/97]

Applies to records required by a permit.

**Factual Basis:** The condition restates the regulatory requirements for recordkeeping, and supplements the recordkeeping defined for specific conditions in the permit. The records being kept provide adequate evidence of compliance with this requirement, therefore, no additional monitoring, recordkeeping or reporting is required.

**Condition 67**

**Legal Basis:** [18 AAC 50.235(a)(2), 18 AAC 50.240(c) & 18 AAC 50.350(i), 1/18/97]

Applies when the emissions or operations deviate from the requirements of the permit.

**Factual Basis:** This condition satisfies two regulatory requirements related to excess emissions—the technology-based emission standard regulation and the excess emission regulation. Although there are some differences between the regulations, the condition satisfies the requirements of each regulation.

The condition does not mandate the use of the department's reporting form, but it does specify that the information listed on the form must be included in the report.

The reports themselves and the other monitoring records required under this permit provide an adequate monitoring of whether the Permittee has complied with the condition. Therefore, no additional monitoring, recordkeeping or reporting is required.

**Condition 68**

**Legal Basis:** [18 AAC 50.040, 1/18/97]  
[40 CFR 60 & 61, 7/1/97]

**Factual Basis:** This condition simply requires Permittee to submit copies of reports or correspondence sent to EPA to the Department.

**Condition 69**

**Legal Basis:** [18 AAC 50.350(d)(4), 1/18/97]  
[18 AAC 50.350(i), 1/18/97]

Applies to all permits.

**Factual Basis:** The condition restates the requirements for reports listed in regulation. The condition supplements the specific reporting requirements elsewhere in the permit and does not need any monitoring, recordkeeping, or reporting. The reports themselves are adequate monitoring for compliance with this condition.

**Condition 70**

**Legal Basis:** [18 AAC 50.350(j), 1/18/97]

Applies to all Permittees.

**Factual Basis:** This condition specifies the periodic compliance certification requirements, and specifies a due date for the annual compliance certification. Because this requirement is a report, no monitoring, recordkeeping or reporting is needed.

**Condition 71**

**Legal Basis:** [18 AAC 50.350(f)(3), 1/18/97]  
[Federal Citation: 40 CFR §52.12(c), 7/1/99]

Applies to all federally approved permits.

**Factual Basis:** This condition clarifies that any credible evidence can be used to verify compliance with the permit, not just the monitoring required under the permit. This condition is necessary to ensure compliance with the Clean Air Act. No monitoring, recordkeeping, or reporting is necessary for this condition.

**Conditions 72 - 78**

**Legal Basis:** [18 AAC 50.345(a), 1/18/97]

Applies to all operating permits.

**Factual Basis:** These are standard conditions required for all operating permits.

**Conditions 79 - 88**

**Legal Basis:** [18 AAC 50.350(g-i), 1/18/97]

Applies because these conditions detail the monitoring, recordkeeping, and reporting required in conditions 3 and 4.

**Factual Basis:** Each permit term and condition must include monitoring, recordkeeping, and reporting for the Permittee to show verifiable compliance with each permit term and condition.

**ATTACHMENT 1****MEMORANDUM****State of Alaska****Department of Environmental Conservation  
Division of Air and Water Quality - Air Quality Maintenance**

TO: John Stone, Chief

DATE: March 24, 1998

FILE: 74.05.02

FROM: John Kuterbach  
Air Quality MaintenanceSUBJECT: Maximum SO<sub>2</sub> Concentration  
from the combustion of #2  
diesel fuel

EPA in their Title V permit reviews is requiring the department to demonstrate that limiting fuel sulfur to 0.5% will ensure compliance with our 500 ppmv SO<sub>2</sub> limit. This memorandum sets forth engineering calculations which demonstrate that combustion of #2 diesel fuel containing up to 0.5% sulfur will always comply with the 500 ppmv SO<sub>2</sub> limit regardless of the engine involved. I recommend that we reference these calculations in future "statements of basis" that we send to EPA with our draft operating permits.

**Summary**

This engineering calculation examined the stoichiometric combustion of #2 diesel fuel and calculated the maximum sulfur dioxide content of the flue gases. Typically, combustion of #2 diesel fuel can produce up to 338 ppmv SO<sub>2</sub> in the flue gas. Although this figure varies proportionally with the carbon content of the diesel fuel, the figure will never exceed the 500ppm limit.

I conclude that combustion of #2 diesel fuel with air will always comply with the 500ppmv emission limit. The ASTM specification for #2 diesel fuel limits sulfur to 0.5% or less.

**Assumptions**

All constituents of the fuel are burned proportionally

Any excess air typical of combustion would tend to dilute the SO<sub>2</sub> concentration in the flue gas, therefore only theoretical air is considered.

#2 diesel fuel is composed of Carbon, Hydrogen, Sulfur, and negligible amounts of Water and ash.

Ignore the water because the standard is a dry standard and the water will drop out of any calculations.

Ignore the ash as negligible unless the study predicts an SO<sub>2</sub> concentration greater than 450 ppm.

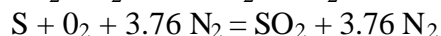
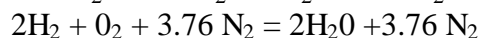
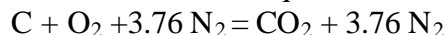
Typical #2 diesel fuel is composed of 87% Carbon, 12.5% Hydrogen, and 0.5% Sulfur

Calculations.

Using normal air for combustion (79% N<sub>2</sub> and 21% O<sub>2</sub>):

For each lb-mole of Oxygen in Air, there is 3.76 lb-mole Nitrogen (1 lb-mole O<sub>2</sub>) = (0.79/0.21)  
= 3.76 lb-mole N<sub>2</sub>

The stoichiometric equations are:



To calculate the dry exhaust gases (CO<sub>2</sub>, N<sub>2</sub>, SO<sub>2</sub>) the following equations are used:

$$\text{moles CO}_2 = (\text{lb C}) \times (1 \text{ lb-mole C}/12.01 \text{ lb C}) \times (1 \text{ lb-mole CO}_2/1 \text{ lb mole C})$$

$$\begin{aligned} \text{moles N}_2 = & (\text{lb C}) \times (1 \text{ lb-mole C}/12.01 \text{ lb C}) \times (3.76 \text{ lb-mole N}_2/\text{lb-mole C}) \\ & + (\text{lb H}_2) \times (1 \text{ lb-mole H}_2/2.016 \text{ lb H}_2) \times (3.76 \text{ lb-mole N}_2/2 \text{ lb-mole H}_2) \\ & + (\text{lb S}) \times (1 \text{ lb-mole S}/32.06 \text{ lb S}) \times (3.76 \text{ lb-mole N}_2/\text{lb-mole S}) \end{aligned}$$

$$\text{moles SO}_2 = + (\text{lb S}) \times (1 \text{ lb-mole S}/32.06 \text{ lb S}) \times (\text{lb-mole SO}_2/1 \text{ lb-mole S})$$

Condensing these equations leaves:

$$\text{moles CO}_2 = \text{lb C}/12.01$$

$$\text{moles N}_2 = 3.76 \times [(\text{lb C}/12.01) + (\text{lb H}_2/4.032) + (\text{lb S}/32.06)]$$

$$\text{moles SO}_2 = \text{lb S}/32.06$$

Then, by Avogadro's Law and the definition of mole:

$$\text{ppmv SO}_2 = 1,000,000 \times [\text{moles SO}_2/(\text{moles CO}_2 + \text{moles N}_2 + \text{moles SO}_2)]$$

## Results

Using 100 pounds of fuel as a basis, we examined the following three cases:

Case	Pounds in Fuel		
	Carbon	Hydrogen	Sulfur
1	87	12.5	0.5
2	96	3.5	0.5
3	78	21.5	0.5

Case 1 is the normal case, Case 2 increases carbon by 10 percent, and Case 3 decreases carbon by 10 percent.

	Case 1	Case 2	Case 3
moles CO <sub>2</sub>	7.24	7.99	6.49
moles N <sub>2</sub>	38.94	33.36	44.51
moles SO <sub>2</sub>	0.0156	0.0156	0.0156
Total Dry Moles	46.196	41.366	51.016
ppmv SO <sub>2</sub>	338	377	306

### Conclusion

The above calculations show that #2 diesel fuel combusted with air will always comply with the 500 ppmv SO<sub>2</sub> limit. The calculations use the conservative assumptions of complete combustion and no excess air. The real-world includes partial combustion and excess air, both of which would tend to dilute the SO<sub>2</sub> concentration in the exhaust effluent.

The equations above can be used as an initial screening for other petroleum fuels even with a higher sulfur content or significant ash.

If you agree this memorandum has value, please share it with the rest of the AQM staff.